

# The Mining Journal

Established 1835

Railway & Commercial Gazette

Vol. CCXLVI No. 6291

LONDON, MARCH 16, 1956

PRICE 9d.

## Progressive Development for Power Supply, Civil Engineering and Mechanical Handling Equipment

Civil engineering works such as  
power station buildings, cooling towers etc.

Coal preparation plant for cleaning and grading coal

Mechanical wagon-marshalling systems for the  
automatic movement of wagons at collieries  
and power stations; wagon hoists and tipplers

Ropeways and cableways for long and  
short distances; level luffing cranes

MITCHELL

Crushers, screens, mills and pulverising plant

Building blocks and bricks of pulverised fuel  
ash composition

Transporters, belt conveyors, telfers and  
equipment for moving material at collieries, power  
stations, steel works, docks and harbours etc.

Boilers, stokers and oil-firing equipment  
for power stations and generating plant in industry

The Mitchell Companies have received from the British Electricity Authority, the  
National Coal Board and other large organizations at home and abroad  
important contracts in these and related fields of engineering

Mitchell Engineering Group Ltd

Mitchell Engineering Ltd

The Mitchell Construction Co  
One Bedford Square London WC1

Mitchell Ropeways Ltd

John M. Henderson & Co Ltd

NON-FERROUS METALS  
METALLIC RESIDUES  
METAL SCRAP  
FERRO ALLOYS



**MANGANESE  
CHROME  
ZINC  
LEAD  
COPPER  
TUNGSTEN  
TANTALUM - COLUMBIUM**

**and all other Non-Ferrous Ores and Minerals**

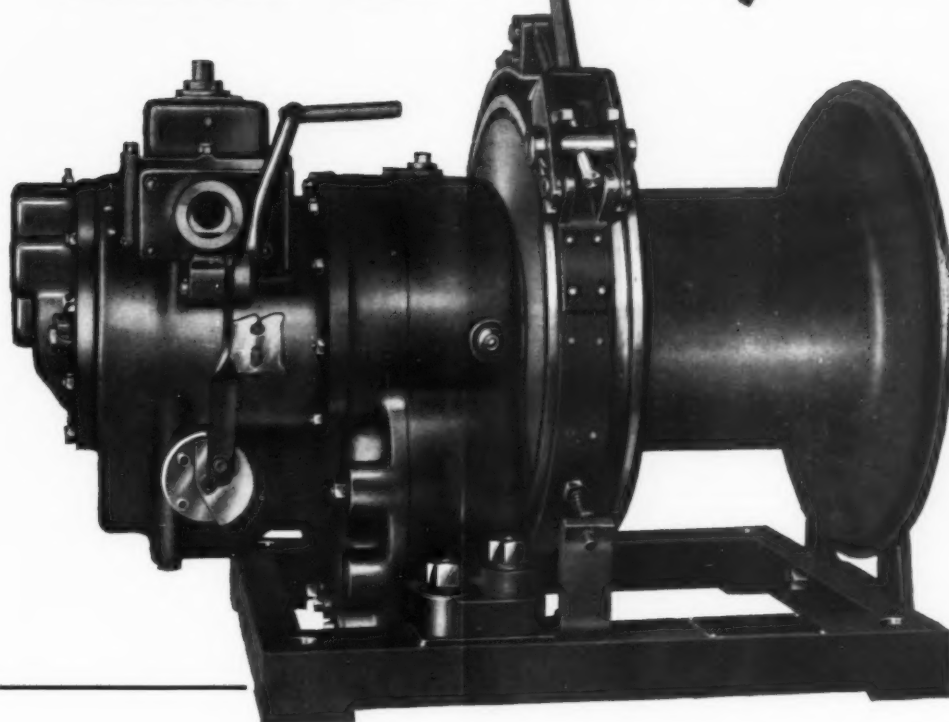
*Philipp Brothers, Inc.*

**70 Pine Street, New York 5, N. Y.**

Cables: PHIBRO  
New York 5, N. Y.

AMSTERDAM • TOKYO • MONTREAL  
BUENOS AIRES • MONTEVIDEO  
LIMA • LA PAZ • CALCUTTA • BOMBAY  
ENGLAND • PORTUGAL • SPAIN

# Hoist and Haul the Holman Way ...



Holman Compressed Air Hoists and Haulages are first preference for all hoisting or hauling wherever low maintenance costs and high reliability are important. Compact, easy to operate and designed to work in arduous conditions, they need the minimum of attention. Typical of the range is the R. W. ROTOWINCH, illustrated here.

CODE	Lifting Capacity with drum half full 80 lb. sq. in. (5.6 Kg. cm. <sup>2</sup> )						Drum Capacity of 2 in. (10 mm.) rope	
	63 ft. min. (18.2 m. min.)		100 ft. min. (30.4 m. min.)		120 ft. min. (36.5 m. min.)			
	lb.	Kg.	lb.	Kg.	lb.	Kg.	ft.	m.
HYA	1500	680	1340	608	—	—	260	79
HYLA	1500	680	1340	608	—	—	410	125
HJA	2280	1034	1980	898	1800	816	410	125
6XRW	—	—	—	—	2700	1224	1000	303
/RW	—	—	4000	1813	—	—	1000	305

Alternative Drum sizes are available.

## AIR COMPRESSORS

## PNEUMATIC TOOLS

## ROCK DRILLS

# Holman

HOLMAN BROS. LTD. CAMBORNE, ENGLAND

PHONE : CAMBORNE 2275 (10 LINES) • TELEX : CAMBORNE 45-210 • GRAMS : AIRDRILL, CAMBORNE, TELEX

London Office : 44 Brook Street, W.1 • Phone : Hyde Park 9444 • Telex : London 2—2105



*speeds production*  
**Underground**



*BTH Standard Transportable Substation, 150 kVA, 3,300/565 volts, 3 phase, 50 cycles. Overall dimensions with switch and tank in low position: 7 ft. 9 in. long by 3 ft. 1 in. wide by 3 ft. 3 in. high. Oil contents less than 50 gallons. 250 kVA Standard Substations and 150 kVA Universal Substations are also available.*

Above or below ground, BTH electric mining equipment—flameproof where required— provides power for the men employed in an essential industry.

## BRITISH THOMSON-HOUSTON

A4729

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED • RUGBY • ENGLAND *Member of the AEEI group of companies*

### *Principal Overseas Representatives*

**AUSTRALIA**, Sydney :  
Australian Electrical Industries Proprietary Ltd., G.P.O. Box 2517.  
Melbourne: Australian Electrical Industries Proprietary Ltd., G.P.O. Box 538F.

**CHINA** :  
Hong Kong: Inniss & Riddle (China) Ltd., 1st Floor David House, 67-69, Des Voeux Road Central.

**NEW ZEALAND**, Wellington: National Electrical & Engineering Co., Ltd., P.O. Box 1055.

**INDIA**: Associated Electrical Industries (India) Ltd., Calcutta P.O. Box 271, Bombay P.O. Box 484.

**PAKISTAN**: Associated Electrical Industries (Pakistan) Ltd., Karachi P.O. Box 4958, Lahore P.O. Box 146.

**SOUTH AFRICA**, Johannesburg: The British Thomson Houston Co., (South Africa) (Pty), Ltd., P.O. Box 482.  
Capetown: Wilson & Herd Engineering (Pty.), Ltd., P.O. Box 1459.

**WEST AFRICA**, Takoradi, Gold Coast, Colony: The West African Engineering Co., P.O. Box 100.

**RHODESIA**, Bulawayo: Johnson & Fletcher, Ltd., P.O. Box 224.

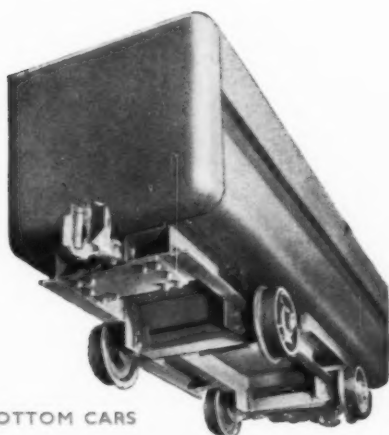
**KENYA COLONY**, A. Baumann & Co., Ltd., P.O. Box 538 Nairobi, P.O. Box 323 Mombasa.

**TANGANYIKA**, A. Baumann & Co., Ltd., P.O. Box 277 Dar-es-Salaam.

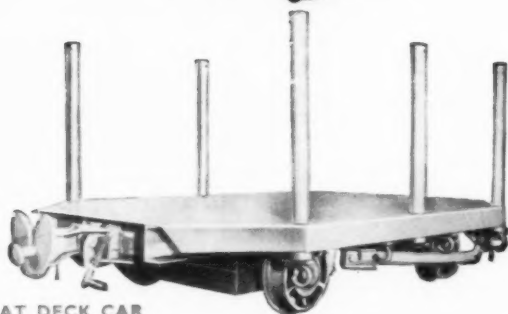
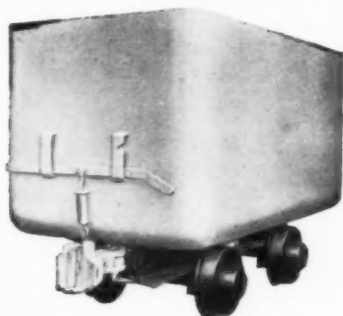
**UGANDA**, A. Baumann & Co., Ltd., P.O. Box 335 Kampala.

*and others throughout the world*



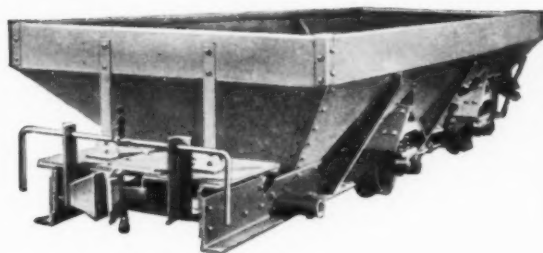


SOLID BOTTOM CARS



FLAT DECK CAR

**DISTINGTON ENGINEERING COMPANY LIMITED • WORKINGTON • CUMBERLAND • ENGLAND**



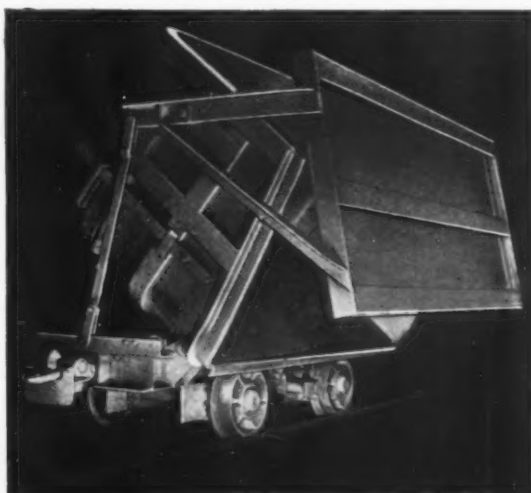
AUTOMATIC DROP-BOTTOM CAR

GRANBY TYPE CAR



Most Distington cars are made by flow production methods which include the extensive use of jigs; their components are therefore interchangeable; re-assembly of the cars is straightforward after they have been exported in 'knocked down' form. Cars required in small quantities, are built individually.

Distington Engineering Company's staff responsible for the design of light railway vehicles, make the best compromises between the saving of weight on the one hand and stiffness, strength and low maintenance expenditure on the other. M.T.K. medium tensile, corrosion and abrasion-resisting steel is frequently used for making Distington mine car bodies. This steel offers a saving in weight or a gain in strength compared with ordinary mild steel.





*speeds production*  
**Underground**



*BTH Standard Transportable Substation, 150 kVA, 3,300/565 volts, 3 phase, 50 cycles. Overall dimensions with switch and tank in low position: 7 ft. 9 in. long by 3 ft. 1 in. wide by 3 ft. 3 in. high. Oil contents less than 50 gallons. 250 kVA Standard Substations and 150 kVA Universal Substations are also available.*

Above or below ground, BTH electric mining equipment—flameproof where required— provides power for the men employed in an essential industry.

## BRITISH THOMSON-HOUSTON

A4729

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED • RUGBY • ENGLAND *Member of the AEE group of companies*

### *Principal Overseas Representatives*

**AUSTRALIA**, Sydney :  
Australian Electrical Industries Proprietary Ltd., G.P.O. Box 2517.  
Melbourne : Australian Electrical Industries Proprietary Ltd., G.P.O. Box 538F.

**CHINA** :  
Hong Kong : Innias & Riddle (China) Ltd., 1st Floor David House, 67-69, Des Voeux Road Central.

**NEW ZEALAND**, Wellington : National Electrical & Engineering Co., Ltd., P.O. Box 1055.

**INDIA** : Associated Electrical Industries (India) Ltd., Calcutta P.O. Box 271, Bombay P.O. Box 484.

**PAKISTAN** : Associated Electrical Industries (Pakistan) Ltd., Karachi P.O. Box 4958, Lahore P.O. Box 146.

**SOUTH AFRICA**, Johannesburg : The British Thomson Houston Co., (South Africa) (Pty), Ltd., P.O. Box 482.  
Capetown : Wilson & Hard Engineering (Pty.), Ltd., P.O. Box 1459.

**WEST AFRICA**, Takoradi, Gold Coast, Colony : The West African Engineering Co., P.O. Box 100.

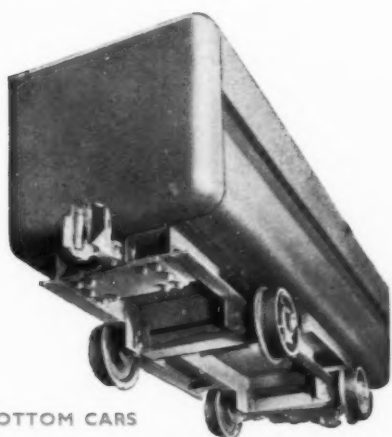
**RHODESIA**, Bulawayo : Johnson & Fletcher, Ltd., P.O. Box 224.

**KENYA COLONY**,  
A. Baumann & Co., Ltd., P.O. Box 538 Nairobi.  
P.O. Box 329 Mombasa.

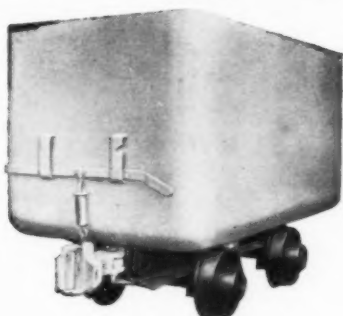
**TANGANYIKA**,  
A. Baumann & Co., Ltd., P.O. Box 277 Dar-es-Salaam.

**UGANDA**,  
A. Baumann & Co., Ltd., P.O. Box 335 Kampala.

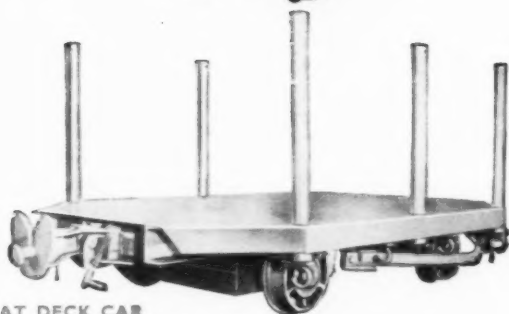
*and others throughout the world*



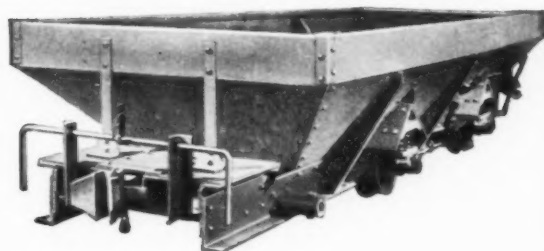
SOLID BOTTOM CARS



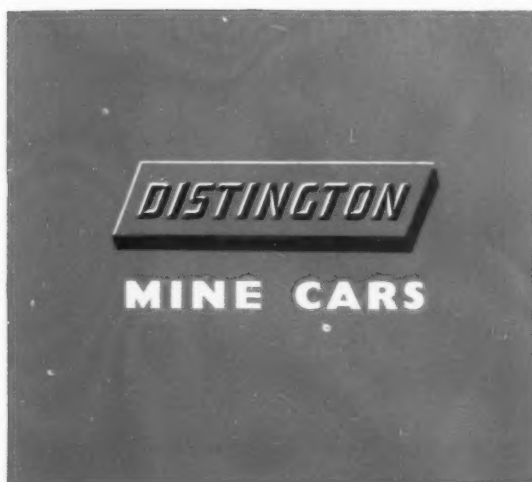
FLAT DECK CAR



AUTOMATIC DROP-BOTTOM CAR



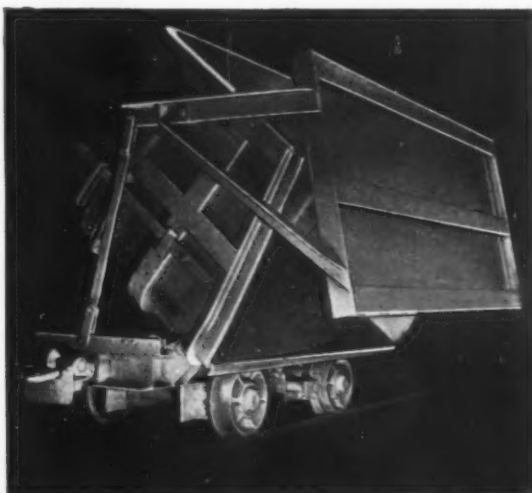
GRANBY TYPE CAR



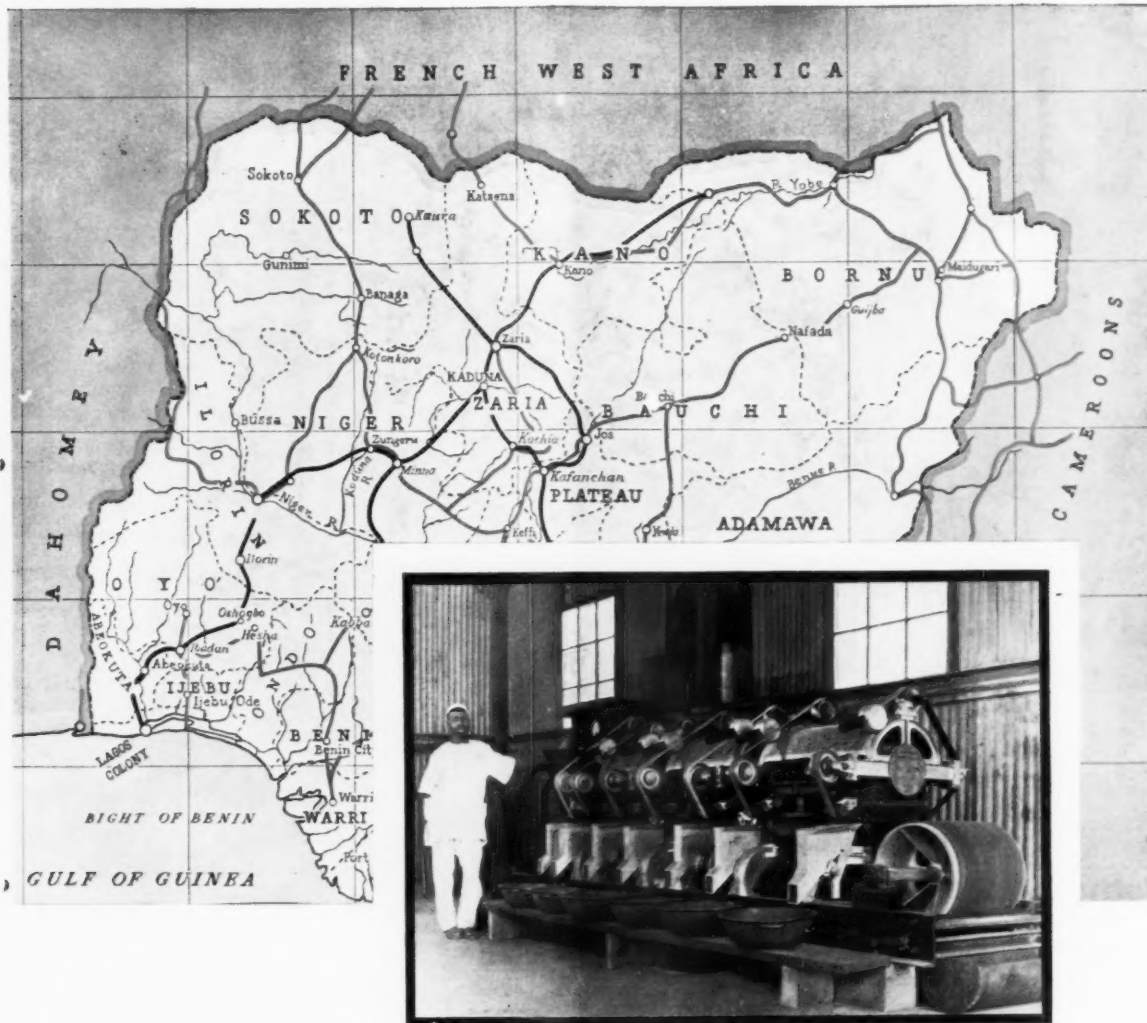
Most Distington cars are made by flow production methods which include the extensive use of jigs; their components are therefore interchangeable; re-assembly of the cars is straightforward after they have been exported in 'knocked down' form. Cars required in small quantities, are built individually.

Distington Engineering Company's staff responsible for the design of light railway vehicles, make the best compromises between the saving of weight on the one hand and stiffness, strength and low maintenance expenditure on the other. M.T.K. medium tensile, corrosion and abrasion-resisting steel is frequently used for making Distington mine car bodies. This steel offers a saving in weight or a gain in strength compared with ordinary mild steel.

**DISTINGTON ENGINEERING COMPANY LIMITED • WORKINGTON • CUMBERLAND • ENGLAND**



## Magnetic separation of columbite in NIGERIA



Huntington Heberlein high intensity magnetic separators are being used by Nigeria's major producers of columbite, to separate this important raw material from which columbium, aptly described as the "rarest jet metal", is derived.

Columbium is vital in the production of jet engines and gas turbines because of its quality of imparting strength at elevated temperatures to alloy steel. It is, therefore, of great strategic importance to both military defence and industry.

The separation of columbite, however, is complicated by its occurrence with other minerals of similar magnetic characteristics and comparable density. The Huntington

Heberlein magnetic separator overcomes this difficulty because of its great selectivity, the result of well designed pole pieces, minimum particle interference and strong magnetic field. These features, together with wide air gap separation and vibration of feed band, ensure effective separation.

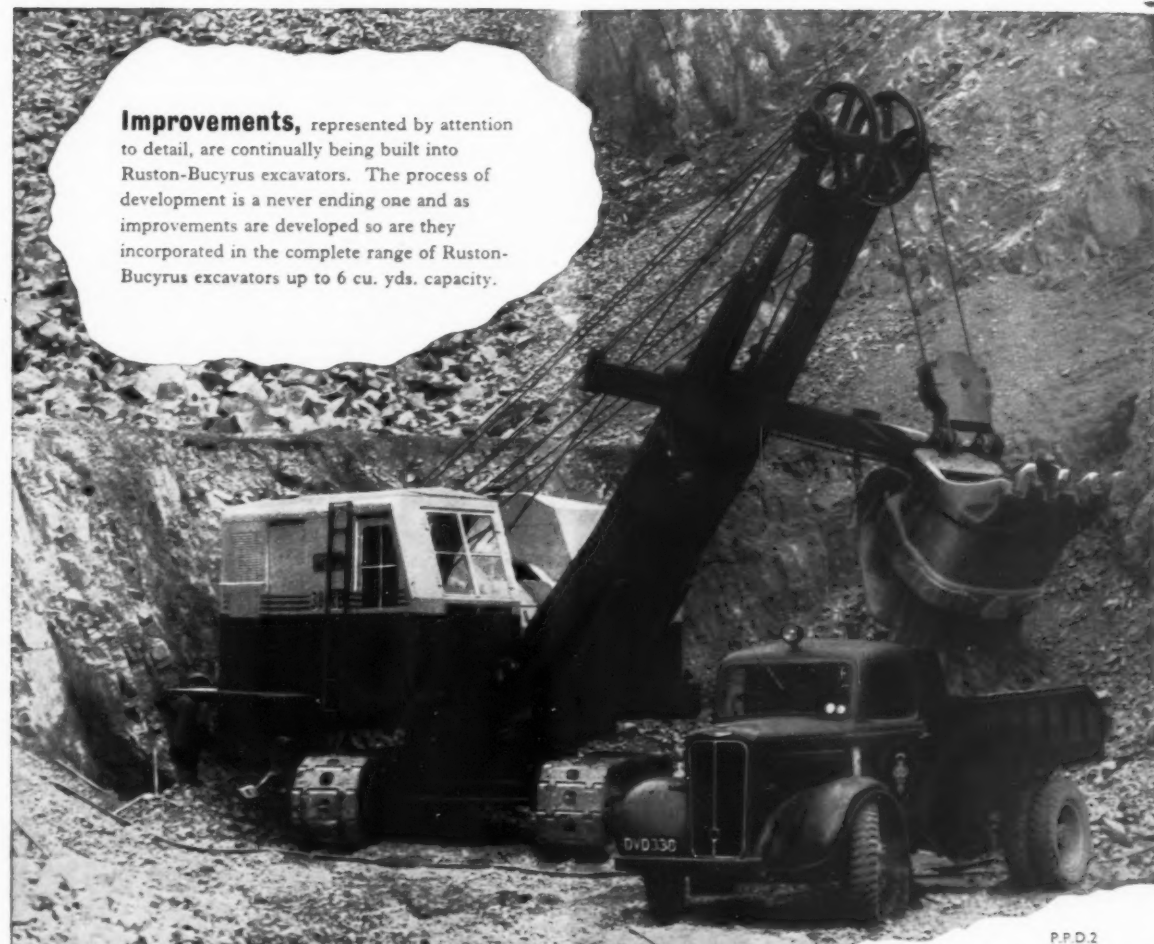
The machine is also widely used for the separation of wolfram from cassiterite and in the production of ferro-tungsten where the purity of wolfram concentrates is of major importance.

**Specialities include:** Ore Concentration Plants, Metallurgical Plants, Ore Roasting Plants, Sintering Plants and Chemical Plants.

*High intensity magnetic separators by*  
**Huntington, Heberlein & Co. Ltd**







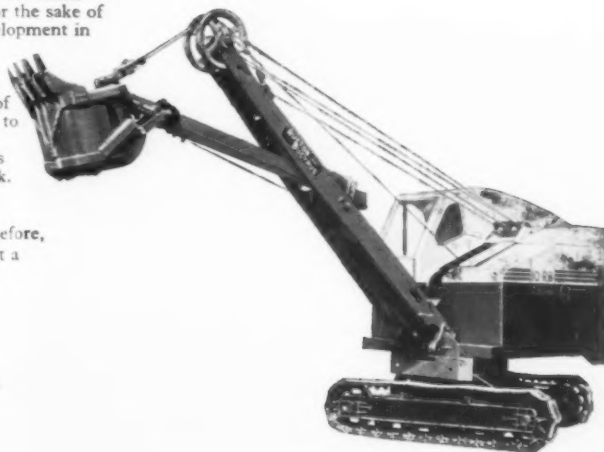
**Improvements**, represented by attention to detail, are continually being built into Ruston-Bucyrus excavators. The process of development is a never ending one and as improvements are developed so are they incorporated in the complete range of Ruston-Bucyrus excavators up to 6 cu. yds. capacity.

P.P.D.2

## A PROGRESSIVE POLICY OF DEVELOPMENT

**R-B Excavators** in certain sizes are now being built with a re-designed cab in a new and attractive colour scheme, but neither design nor colour scheme has been introduced merely for the sake of change. Both in fact are the result of the policy of development in detail for the customer's benefit. The new design is a purely functional one, devised to increase ease of operation and to give greater visibility. The new colour styling and metal pre-treatment proclaim a long period of patient research into the problems of metal preservation to produce a finish that will give an even higher degree of body durability under the severe and exacting conditions in which the R-B excavator is normally expected to work.

**Replacement** of your existing equipment can, therefore, be considered at any stage with complete confidence that a new R-B excavator will, in one direction or another, represent an improvement upon existing equipment.



**RUSTON-  
BUCYRUS**

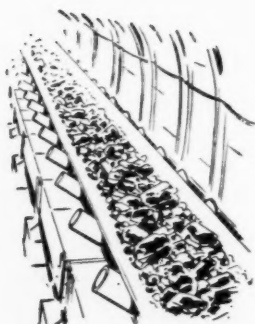
**RUSTON-BUCYRUS LIMITED  
EXCAVATOR SPECIALISTS  
LINCOLN**





## High Coefficient of Friction

**...another reason why Pluvicor is in greater demand than any other Fire Resistant Conveyor Belting**



A higher coefficient of friction is another technical "plus" that BTR engineers, ever concerned with production improvement, have built into Pluvicor belting. This feature ensures that Pluvicor belting exerts a non-slip driving grip on the drum. It does not matter whether conditions are wet or dry—the presence of water in no way detracts from the efficiency of the drive. Just one more practical reason why more and more Pluvicor is going into the mines.

**BTR PLUVICOR**  
FIRE RESISTANT CONVEYOR BELTING

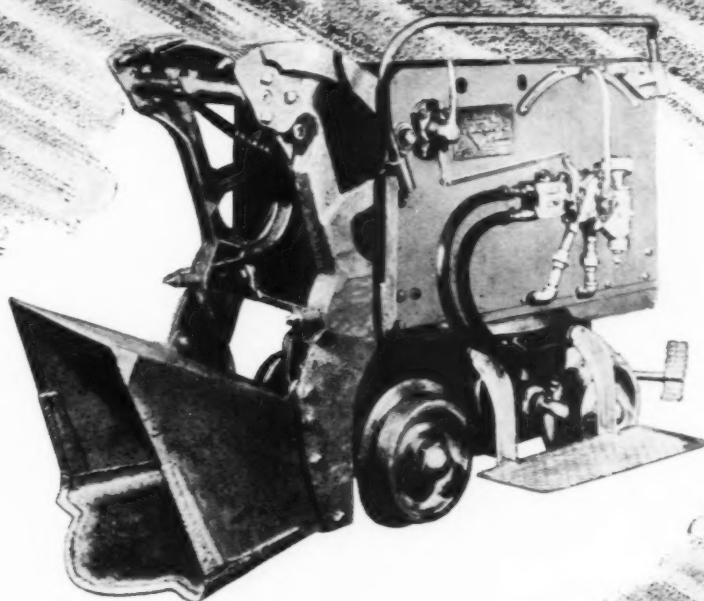
**N.C.B.  
APPROVED**



**BRITISH TYRE & RUBBER COMPANY LIMITED**  
HERGA HOUSE, VINCENT SQUARE, LONDON S.W.1

**ENGINEERS IN RUBBER**

*the record-breaking Eimcos do it again*



## A NEW WORLD TUNNELLING RECORD

*has been established using* **EIMCO** *MODEL 21 LOADERS*

On the St. Fillans Section of the North of Scotland Hydro-Electric Board Breadalbane project, the Mitchell Construction Company have established a new world record for rock tunnelling with an advance of 557 feet in 7 days.

The incomparable Eimco Rockershovels have made an outstanding contribution to this achievement.



Head Office & Works: EIMCO (GREAT BRITAIN) LTD TEAM VALLEY GATESHEAD-ON-TYNE TEL: LOW FELL 7-7241

London Office: PRINCES HOUSE PICCADILLY LONDON W1 TEL: GROSVENOR 2184

# For Gold Extraction

---

'Cassel' Brand Sodium Cyanide,  
the purest and most concentrated form of cyanide,  
is unsurpassed in the treatment of all gold ores.

---

## 'Cassel' Brand SODIUM CYANIDE

MANUFACTURED BY:  
IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1



# The Mining Journal

Established 1835

Vol. CCXLVI No. 6291

LONDON, MARCH 16, 1956

PRICE 9d.

## CONTENTS

Notes and Comments	321	Machinery and Equipment	331
From Our Own Correspondent	323	Mining Miscellany	332
Western United States; Australia		Metals, Minerals and Alloys	333
Can Exports of Mining Machinery be Increased?	324	The Mining Markets	335
Prospecting in Southern Rhodesia	326	Company News and Views	336
Silicons in the Mining Industry	329	Company Meetings	339
Current Progress in the World Coal Mining Industry	330	The Chartered Bank of India, Australia and China	

Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 5s. per annum

## NOTES AND COMMENTS

### Selling Mining Machinery Overseas

An article published in *The Mining Journal* of November 4 drew attention to some of the difficulties with which British manufacturers are confronted in expanding sales of machinery abroad. Having regard to the extremely high proportion of existing production capacity which is heavily committed on National Coal Board orders, it might even be said that the initial problem for many firms is not how to step up overseas sales, but rather how to gain any foothold at all in the export field.

In view of the interest shown in our preliminary article, we have endeavoured to bring the problems associated with the expansion of mining machinery exports into clearer focus by obtaining the views of leading firms in various sections of the industry. We have also approached the National Coal Board in an endeavour to find out the extent to which it might be possible for the Board's own future requirements to be more precisely defined. Finally, information has been obtained from the Board of Trade regarding various aspects of export policy and the facilities which are available for assisting manufacturers to expand their sales to customers overseas.

From these enquiries it emerges very clearly that the whole subject of mining machinery exports is so complex, and has so many different facets, that generalizations are apt to be highly misleading, particularly since firms in different sections of this industry differ widely, not only in their outlook and policy, but even in the type of marketing organization which is most appropriate to their special needs. Analysis of the information we have obtained suggests that aspects which might usefully be accorded further attention in these columns include, *inter alia*, the allocation of manufacturing capacity between N.C.B. and export needs, surveys of overseas markets, sales and service organizations, the possibilities of co-operation between firms or industries interested in expanding their export business, and the machinery set up by the Government to assist exporters. Some of the questions arising under these headings are considered in two articles on mining machinery exports, the first of which is published elsewhere in this issue.

We do not believe that any simple blueprint can be drafted which could serve as a general guide to exporters of mining machinery; the task, if not impossible, is most certainly

one which we should not attempt after limited investigation and within the compass of two short articles. It is hoped, however, that our thoughts on export problems may serve as a springboard for further discussion.

Since the war, Britain's economy has periodically been subjected to financial crises, with such consequential inconveniences as import restrictions and credit squeezes. Yet it seems by no means beyond the national resources to step up exports to a point which would promote a consistently favourable balance of trade. Though overseas sales of such specialized equipment as mining machinery must always remain small in comparison with those of motor cars, any significant increase in the total figure would obviously be a very valuable contribution towards a solution of the difficulties arising from shortage of foreign exchange.

In view of the accelerating tempo of mining expansion throughout the world, it is evident that immense potential markets must exist for a country which has pioneered the development of many types of machinery and equipment, which has a reputation for quality second to none, and which—in Commonwealth countries, at least—has a priceless asset in the vast fund of goodwill existing towards this country and its goods.

Government policy in regard to exports of mining equipment must inevitably be conditioned by the fact that, notwithstanding the phenomenal progress of nuclear technology, the national economy remains critically dependent on coal, which must continue to supply the bulk of our fuel requirements for a considerable time to come. It is evident that in these circumstances the country's long-term interests would not be effectively served by diverting existing capacity from N.C.B. orders to the export field. On the other hand, the present Government is no less insistent than its predecessors on the need for a more vigorous export drive. Manufacturers of mining machinery are therefore entitled to assume that their efforts to develop overseas markets would be looked upon with favour in official quarters, provided that the expansion of exports involved no reduction in the manufacturing potential at the disposal of the N.C.B. From the manufacturer's point of view, there seems much to be said for broadening the markets and reducing the present dependence on a single customer.

We have no doubt whatever that, if the way can be found,



the mining machinery industry has the means and the ability to expand its export trade, and presumably it also has the will. If these articles help to signpost a clearer route through the mists which at present prevent many exporters from formulating a satisfactory policy and programme, we shall regard them as well worthwhile.

### Recent Advances in Uranium Exploration

An announcement was made on March 1 that the United Kingdom Atomic Energy Authority will advance up to £5,000,000 of the £7,250,000 required to bring the Mary Kathleen uranium field in Queensland into production. This decision will focus the attention of mining geologists on a new type of radioactive deposit, unrecorded in the technical literature, in which payable uranium mineralization can be found. The Mary Kathleen orebody is a skarn, formed in limestone country-rock close to a granitic intrusion. In addition to the calc-silicate minerals which commonly occur in such an environment, the skarn is rich in apatite and allanite, together with a new rare-earth silicate known as stillwellite and with locally abundant uraninite in very minute crystals. The last forms the pay mineral.

No occurrence of this nature workable for uranium has ever been reported before. The occurrence of uraninite, or of the pitchblende — hydrocarbon aggregate known as thuchlorite, has long been known in magnetite or sulphide skarns at Dannemora, Norberg, and Riddarhyttan in Sweden, and there have been unconfirmed rumours of by-product of uranium from iron-ore skarns in Russia. In the Swedish occurrence the uraninite is no more than a mineralogical curiosity. But since uranium tends to be concentrated in those residual fluids from granitic magmas which give rise to skarn deposits where they mineralize adjacent limestone, the latter environment is obviously a hospitable one for the radioactive element. With Mary Kathleen in mind, it is an environment to which uranium prospectors will henceforth look with increased interest.

New uranium fields of quite a different kind have lately been reported from the United States. Lignite and carbonaceous shale of Late Cretaceous to Miocene age, containing upwards of 0.10 per cent uranium, have been found in several widely separated areas in central Montana and the Dakotas. One of these deposits, at Riley Pass in South Dakota, is estimated to cover an area of 440 acres underlain by a lignite seam over a foot thick which has a uranium tenor of 0.76 per cent. Normally lignite and other coals are devoid of uranium; but, perhaps acting like the anion-exchange resin now used in most uranium-extraction plants, they have a marked facility for removing the metal from percolating waters. Increasing attention is therefore being given to such carbonaceous deposits wherever they are contiguous to strata from which groundwaters could dissolve dispersed uranium.

A third recent discovery, as yet of little economic importance, is again of special interest to the exploration geologist. Late in 1953 uraninite was found in the Serra de Jacobina of Bahia, Brazil. This is a region where gold has been mined in a small way since the late 17th century, the auriferous rocks being pyritized conglomerates low down in a sequence of barren quartzites of pre-Cambrian age. The local geology bears a most striking resemblance to that of the Witwatersrand and of Blind River; and it has now been found that, as in the Witwatersrand, there is a sympathetic variation of the uranium content of the reefs with that of the gold. The uranium content of the Brazilian bankets is only about 0.01-0.02 per cent, a tenor of the same order as that of the South African ores; and it would seem that commercial output will not be possible except as a by-product if the gold mineralization should prove adequate to support a large-scale mining operation. But the repetition of the

same geological pattern as that seen in the two greatest uranium fields of the world is startling. Knowledge of favoured structures for uranium mineralization is now becoming so extensive that geologists may soon be able to say the ore is not so much "where you find it," as "where it should be".

### A Banker Looks at the East

With the ever increasing momentum of Western industrial expansion—substantially dependent for its raw materials upon countries situated east of Suez—the Far Eastern scene receives continuous and concentrated study. Against this background, reviews from the Eastern banks are accorded particularly close attention. In this context the recent statement by Mr. V. A. Grantham, chairman of the Chartered Bank of India, Australia and China, provides an example of the authority with which so widely based an organization may speak. C.B.I.'s sphere of influence not only covers India, Pakistan, Burma, Ceylon, Malaya and Indonesia but embraces many other Eastern countries including Japan and the Philippines.

Politically Mr. Grantham sums up the position in the East by confirming that "the tide of Asian nationalism continues to flow strongly and it is inevitable that this should follow emancipation from Colonial rule". However apposite this observation may be whether it is a force operating for good or evil will depend largely on the new regimes realizing, as they become more mature politically, that in the modern world no country, however well endowed in material resources, can live in isolation. So far Mr. Grantham believes that political independence has imparted, to some extent at any rate, a new sense of responsibility to labour. But he warns that the re-distribution of power, both political and economic, may be gravely imperilled by the pressure of population. What is needed in the East is generous economic assistance as ultimate success must depend upon balanced economies where the increase in population is more than matched by increased production and internal consumption.

As the world's most important producer of tin, Malaya's political disturbances over recent years have been a matter of continuous anxiety for the Western world. Recently, however, developments have taken place which could herald an improvement of conditions. Discussions held in London last month between the Secretary of State for the Colonies, and the Chief Minister of the Federation of Malaya, Tengku Abdul Rahman, resulted in a proclamation that full self-government and independence within the Commonwealth for the Federation would take place—if possible—by August, 1957. Of no less importance was the reassurance given recently by the High Commissioner for the Federation of Malaya when he spoke on the budget for the present year, that it remains the present government's policy to encourage investments from abroad and to foster conditions in which the overseas investor can continue to assist the Federation's economic development without fear of discrimination or unfair treatment.

Mr. Grantham also notes with satisfaction that the governments of the Federation and of Singapore have sought the assistance of the Bank of England to help in implementing a Central Banking System recommended by the World Bank Mission. On the question of the Federation and Singapore uniting, he feels this is improbable in spite of the attendant economic advantages. Further, he fears that if the idea of a central banking system should be adopted, separate currencies would be established. Should this happen—and Mr. Grantham sincerely hopes it will not—it would be difficult to foresee the future of Singapore. With labour troubles impeding industrialization plans, only its entrepôt trade would be available to maintain its large and growing population.



## Western United States

(From Our Own Correspondent)

Portland, Oregon, February 28.

The perennial bill by Senator Green of Rhode Island to repeal the Silver Purchase Act which sets the price of domestically mined silver at 90½ c. has been introduced in Congress where it has encountered the perennial arguments, namely that the present price allows the government a seigniorage of 30 per cent and that a stable price of silver is essential to the welfare of those base metal industries which produce it as a by-product. In the hearings on the bill the American Mining Congress came up with the suggestion that Congress recognize the increase in costs of mining by "reducing the seigniorage," a canny way of plugging for an increase in price. With present prices of silver, copper, lead and zinc it does not appear that either side has much of an argument.

### NEW COPPER PRODUCER

After ten years of preparation, in December, six months ahead of schedule, San Manuel Copper Corporation (Magma Copper) put its smelter into operation and cast its first blister. Full production is expected by mid-year when 30,000 tons of ore will be treated daily for an annual yield of 70,000 tons of copper and 3,000 tons of molybdenum. The ore has a copper content of 15.4 lb. per ton with 6 lb. molybdenum. Mining is by block caving with two 1,600 ft. shafts. Ultimate cost of development is estimated at \$114,000,000 of which \$94,000,000 was supplied by a government loan which bears five per cent interest. Reserves are estimated at 3,750,000 tons of recoverable copper.

Recently in the Superior district in Arizona, Anaconda has made lease purchase contracts for the Belmont, Queen Creek and Magma Superior mines, an area of 3½ sq. miles adjoining the holdings of Magma Copper Co. The properties under contract have been exploited for the past half century with indifferent success.

### MISCELLANEOUS NEWS

In view of its much broadened activities in recent years Bunker Hill Mining and Concentrating Co. has followed the example set recently by Anaconda and has shortened its name to "The Bunker Hill Co."

Alcoa has initiated its enlarged production programme for the Northwest by pouring its first metal at the new reduction plant at Wenatchee, Washington. Alcoa is also enlarging its capacity at its Vancouver, Washington plant and Reynolds Metals is doing the same at Troutdale, Oregon and Longview, Washington. Meanwhile Harvey Aluminium Co. is starting construction on its new plant at The Dalles, Oregon.

As illustrative of the trend toward diversification noted in recent issues the following recent news items are of interest: Daybreak Uranium, Inc. of Washington has leased the mines and plant of Calaveras Copper Co., leading producer on the "Foothill Copper Belt" of California; in the nearby Mother Lode New Jersey Zinc is carrying on extensive exploration of the Royal and Mountain King gold mines with the idea of converting them to open pit operation; King Solomon Mining Co. and Apache Uranium have purchased the Arcturus group of lead-silver mines in Inyo County, California, and Continental Uranium has taken an option on deposits of copper ore held by Atlas Uranium in Lisbon Valley, Utah, where drilling is reported to have demonstrated the existence of 300,000 tons of copper ore.

## Australia

(From Our Own Correspondent)

Melbourne, February 29.

Operations in 1955 have established Zinc Corporation as the largest producer of lead concentrate in Australia with a total for the year of 113,126 tons; containing 86,957 tons of lead; ore mined was 645,959 tons, assaying 13.7 per cent lead, 3 oz. silver and 10.4 per cent zinc. New Broken Hill Consolidated is the largest producer of zinc concentrate in Australia, with an output of 133,695 tons, containing 68,557 tons of zinc; ore mined was 531,447 tons, assaying 11.5 per cent lead, 2.5 oz. silver, and 11.9 per cent zinc. Zinc Corporation produced 116,645 tons of zinc concentrate containing 61,306 tons of zinc, and New Broken Hill 56,254 tons of lead concentrate, containing 44,549 tons of lead. The combined output of ore by both companies was 1,177,406 tons, or 61.4 per cent of the total ore mined on the Broken Hill field. In comparison, North Broken Hill produced 67,027 tons of lead concentrate and 69,001 tons of zinc concentrate. Broken Hill South's figures were 53,109 tons of lead concentrate and 65,976 tons of zinc concentrate.

At the end of 1955, 90.93 per cent of employees and staff received a wage higher than the basic wage of £13 2s. 6d. per week, exclusive of lead bonus. Average earnings of all employees, including contractors, were £A1,813.7 for the year, including £A723 lead bonus; employees on the basic wage received £A1,410.7 for the year, including lead bonus, £A723. Incidence of these payments per ton of ore mined, were: wages, employees and staff, 56.06s., lead bonus to employees and staff, 37.17s.; total per ton of ore mined, 93.23s. These figures are a striking illustration of factors influencing present mining costs in Australia, and of the burden of a bonus paid on the selling price of lead, totally unrelated to profits or any incentive to production.

### NEW BROKEN HILL CRUSHER STATION

New Broken Hill Consolidated has completed a new underground crusher station below No. 21 level. The excavation of the chamber was made difficult by bad ground, necessitating complete support by reinforced concrete, replacing the square set timbering used in cutting the chamber. Total equipment erected in the station weighed 150 tons. The crusher has a jaw opening of 48 in. by 60 in., giving a minus 7 in. product, and was supplied by Fraser and Chalmers; capacity is 500 ton per hr., and the drive is by a 230 h.p. motor.

The dust collecting system, servicing the crusher and ore pass is operated by a fan of 9,000 cu. ft. per min. capacity, against an 8 in. water gauge, in circuit with a bank of flannel filter bags. A Ross feeder ahead of the crusher is also included in the dust control system. In the event of failure in the dust collecting system, water cooling and lubricating circuits of the crusher or over-filling of the ore pass, audible and visual signals are given, and if the fault is not rectified within two minutes, power to the crusher motor is cut off.

The plant at the Nairne pyrite mine, in the hills near Adelaide has been officially opened. The concentrate will supply 30,000 tons of sulphur to S. Australian users.

The State of South Australia requires 150,000 tons of sulphuric acid per year, and requires 50,000 tons of sulphur for munition production and the manufacture of superphosphate. Concentrate is railed from the Nairne pyrite mine to the acid plants. The ore deposit has been proved by drilling over a length of one mile to contain 50,000,000 tons of ore, sufficient for 150 years at the present rate of extraction.

# Can Exports of Mining Machinery be Increased?

This article is concerned mainly with the relationship between the requirements of the National Coal Board and export policy. It will be followed by a second article in which such problems as market research and the organization of sales and service in overseas territories will be discussed.

Experience in many countries and in many industries has shown that success in the export market depends on the quality and price of the products and on the service which can be offered to overseas customers. Delivery times must also be competitive and, above all, they must be strictly kept. The problem of spares requires to be very carefully considered. In general, the export market cannot be adequately developed on the basis of being regarded largely as an outlet for surplus production, but calls for an accurate knowledge of conditions and requirements overseas. To export successfully it is usually essential to have a large home market and a correspondingly large production, but this condition is not always applicable to firms catering for a highly specialized demand, such as exists for many types of mining supplies.

Up to a point the required conditions exist in Britain for expanding overseas sales of mining machinery and equipment, since a large home market is assured for a number of years by the ambitious capital investment programme of the National Coal Board and the mechanization of British pits. Manufacturers also derive valuable technical benefits from the work of the Board's Central Research Department, which is helping to keep British equipment in the vanguard of mining progress.

On the other hand, it is evident that, if exports are geared to a production rate controlled primarily by the level of N.C.B. demand, any sudden change in the volume of the Board's orders is liable to have a disorganizing effect on manufacturing schedules. The effect is either that suppliers might be faced with requirements for which they have not catered, with consequent delays in deliveries to customers overseas, or they might have to revise requirements because N.C.B. requirements proved smaller than anticipated. Uncertainty of this kind is not conducive to efficiency and is upsetting to export drives.

## KEY KNOWLEDGE OF REQUIREMENTS

Our enquiries have revealed the existence of a fairly wide consensus of opinion that export efforts are hampered because, broadly speaking, the future requirements of the N.C.B. are not made known with sufficient precision to permit planning of production schedules. We understand that at least one well-known firm would consider expanding exports to the point of extending its production facilities, if a fixed proportion of the capacity could be allocated to known future N.C.B. requirements.

While it would certainly be advantageous to obtain N.C.B. requirements in advance, difficulties arising from the wide variation of physical conditions in British mines and from the fact that existing planning staffs are already over-worked, impose limitations on the degree of precision with which future needs could be defined. By studying the broad framework of capital reconstruction, manufacturers of the more standardized types of equipment can plan their own production and sales programmes with reasonable confidence. So far as highly specialized equipment is concerned, however, it seems doubtful whether the Board could commit itself in sufficient detail to provide its suppliers with a specific basis for forward planning.

It should be borne in mind that any estimate of the probable N.C.B. demands on total factory capacity over the next five/ten years might well require substantial re-

vision because of technological improvements in methods of mining coal, or might require modification as a result of economic circumstances beyond the Board's control; for example, a prolonged recession in the economy of the U.S.

Many of us recall only too well estimates of the types of machinery likely to be used for the mechanization of the mining industry in this country, which were made by the well-informed people who contributed towards the findings of the Reed Committee ten years ago. How very wide of the mark these estimates proved to be! It is similarly possible that during the next two years ideas in coal-getting and conveying may make nonsense of even the most authoritative estimate of future total demand for mining machinery and, to a still greater degree, of any forecast of the demand for a particular type of machine made by a particular factory. Where the technological factor is less obscure, as in sinking new shafts and installing mine cars, the N.C.B. seems prepared to estimate its requirements as far ahead as manufacturers can reasonably expect.

## PROCEDURE AND LONG-TERM PLANNING

While vagaries in N.C.B. purchasing are attributable in some respects to circumstances which are unavoidable, it seems evident that the difficulties of advance planning must tend to be increased by a system whereby orders are placed at area level, as is the present practice, although area buying is, of course, carried out with considerable advice and guidance from headquarters. The setting up of a Purchase and Stores Department suggests the possibility that a greater degree of centralization may be contemplated by the Board.

The existing procedure, however, is by no means incompatible with comprehensive long-term purchasing programmes based on data compiled with the co-operation of all concerned. In connection with the drive to intensify mechanization at the coal face, it is noteworthy that certain manufacturers have been asked by the Board to indicate their production capacities for some three years ahead and the Board's area managers have also been asked for their forward requirements for the next twelve months, this information relating particularly to power loading equipment.

With considerable encouragement from the N.C.B., manufacturers in the U.K. are competing with one another to find solutions to mechanization and mining problems. It is also well known that the N.C.B. is exploring mechanization developments in other countries and is not neglecting opportunities of trying out foreign machinery and equipment in British mines.

Imports of mining machinery, other than portable tools, have risen in value from £100,680 in 1953 to £136,436 in 1954 and £138,975 last year. Having regard to the comparatively small scale of the Board's overseas purchases, and the rising cost of mining equipment, the slight upward trend in importation would appear to have little significance. We understand that N.C.B. policy is to confine overseas buying to specialized items or to equipment which is required for experimental purposes. Other considerations apart, the Board may have to set up its own service organization when imported equipment is installed and provide for the production of spares. This in itself is a very cogent reason for giving all possible encouragement to manufacturers at home.

Conversely, British exporters of mining machinery are at a disadvantage when seeking to establish a foothold in overseas markets, where they are in competition with local industries, whose service departments are supported by factories situated within greater proximity to the principal customers. This handicap is by no means insuperable, but presents problems which British exporters cannot afford to overlook.

We understand that the N.C.B. would be happy to see a thriving export business being done by the British coal face machinery manufacturers and that, in principle, it would give all possible encouragement to an export drive, providing that—as previously stated—exports could be expanded without jeopardizing its own requirements. From the views expressed by various manufacturers, it would appear that the more precise definition of future requirements, coupled where possible with substantial forward orders, would be among the most constructive contributions to the expansion of the export trade, which the N.C.B. is in a position to make.

#### COMPETITION FOR U.K. EXPORTERS

In recent months British exporters of mining machinery and equipment have encountered severe competition from manufacturers in Western Europe. In some instances, it is alleged, the latter are receiving contracts from the coal mines in their own countries on a scale which enables them to reduce overheads and quote prices substantially below those of British products of similar class and quality. Here is another direction in which practical assistance could be given by the Board.

The question whether, after covering the increasing and diverse requirements of the N.C.B. to the fullest possible extent, spare capacity for mining machinery manufacture remains, or could be developed to take advantage of a putative export demand, would need to be considered by the manufacturers themselves in consultation, as might be necessary, with the Board of Trade. The first step, however, must be to determine the N.C.B. requirements for a number of years ahead within the most narrow limits which are deemed reasonably practicable, and this is clearly a matter for the N.C.B.

Enquiries from the Board of Trade indicate that manufacturers are at liberty, broadly speaking, to export what they can and where they can, but in a few instances they will be faced with licensing difficulties. The position in regard to any particular country is liable to change so rapidly that generalizations are unwise. There are, of course, a few countries to which certain types of goods regarded as having potential military value cannot be sent. For example, as a member of the U.N. Britain is obliged to observe restrictions on the export of various classes of goods to China.

It should also be remembered that in most countries importation is subject to control. However, an overseas buyer wishing to purchase equipment from the U.K. or elsewhere is scarcely likely to place a firm order without first making certain that an import licence will be granted. Since most countries are anxious to foster the progress of primary production, import licences are more likely to be forthcoming for mining machinery and other capital equipment than for consumer goods, provided, always, that equipment of a suitable type is not being locally made.

#### ASSISTANCE FOR EXPORTERS

Successive British Governments have repeatedly exhorted manufacturers to expand their export trade. Yet firms seeking to develop overseas markets are apt to find that the path of the would-be exporter, in the words of Omar Khayyám, is "beset with pitfall and with gin". For the

benefit of manufacturers of mining machinery with little or no experience in this difficult field, it may be helpful to refer briefly to some of the principal facilities which have been established for the guidance and assistance of exporters.

Information regarding export prospects is obtainable from the Export Services Branch of the Board of Trade at Lacon House, Theobalds Road, London, W.C.1. This Branch is split into commodity sections. It assists exporters by providing market information, helping them to appoint agents in overseas countries, and providing reports on overseas firms. Answers can be given to questions about quotas, consular invoices and fees, certificates of origin, marking and packing of export goods, trade and merchandise marks, and sales taxation. When marketing enquiries cannot be answered from information available in London, the Export Services Branch will write to the appropriate officer in the country concerned. Enquiries regarding potential markets for particular products can only be answered, however, if a detailed description of the product in question is supplied, together with catalogues, particulars of price, discount, delivery, and proposed terms.

Full information regarding any particular country can be obtained from the Country Branches Department, Horse Guards Avenue, Whitehall, London, S.W.1.

As world trade becomes increasingly competitive, exporters are obliged to offer longer credit terms. Consideration has to be given to the possibility that payment might not be made at due date. The overseas buyer may become insolvent, or transfer of the necessary sterling to the United Kingdom might be prevented by the imposition of exchange restrictions. There is also the risk of war, which might prevent payment being made when due.

The possibility of heavy losses through these and other causes may be avoided by taking advantage of the facilities provided by the Export Credits Guarantee Department. Mining equipment falls under the Department's normal forms of cover. If the terms are 180 days or less the Exchange Control is automatic. If they exceed 180 days, the approval of Exchange Control must be obtained. In general, E.C.G.D. will provide insurance on the terms normally prevailing in that class of business, premium rates depending on the type of goods, the countries, and the terms of payment.

#### OPPORTUNITIES IN U.S. AID

Valuable business opportunities for British exporters are provided by the procurement of goods for U.S. aid to countries in Europe, Asia, Africa and Latin America, which is carried out through the International Co-operation Administration set up by the U.S. Government. The Board of Trade has been informed by the European Office of G.S.A. that in the past U.K. firms have lost opportunities for doing business with G.S.A. through non-compliance with the conditions of the invitation. Among the most frequent reasons for rejection are failure to quote all prices in U.S. dollars, failure to quote prices for each individual item in a tender, failure to undertake delivery within the time specified, refusal to promise that the goods supplied will be marked with the correct symbols, failure to accept the indicated payment terms, and objection to the special and general conditions stipulated with the invitation to bid.

This article has been concerned with such broad national considerations as the requirements and policy of the N.C.B. and the machinery set up by the Government to assist exporters. A subsequent article will discuss possible approaches to various problems which seem to require consideration and possible action, either individually or collectively, on the part of exporters themselves.



# Prospecting in Southern Rhodesia

Although the value of mineral production in Southern Rhodesia is only one-fifth of that of Northern, a great variety of minerals is mined and there is at present considerable prospecting activity largely in reserved areas. In the following article our Rhodesian correspondent has summarized the conditions for obtaining exclusive rights, and gives details of the reservations that have been granted. A mineral plan of the Colony showing the location of these reservations, as well as the known mineral occurrences, is included and should be retained for reference, as further articles will appear in *The Mining Journal*.

In 1947 provision was made in the Mines and Minerals Act of Southern Rhodesia for the granting of prospecting reservations in an effort to encourage the search for minerals, particularly by the larger mining concerns. In spite of fairly general opposition from the Smallworker community, the Bill was passed, and to date 37 applications for Exclusive Prospecting Orders (E.P.O's.) have been accepted by the Mining Affairs Board, of which 15 are now current.

A review of the E.P.O's. granted is given below and serves as an indication of the extent of large-scale prospecting activity in the Colony.

## CONDITIONS OF RESERVATION

The conditions under which such reservations are granted may be summarized as follows:

The applicant has to satisfy the Board as to his financial status, supply names and nationalities of the directors, etc. He must specify the area in which he wishes to prospect and the minerals sought. After provisional acceptance a temporary reservation is made by the Mining Commissioner, and a notice published in the *Gazette* inviting objections. Final approval lies with the Governor. If granted, the rights under an E.P.O. are not transferable.

Every order stipulates certain minimum expenditure depending on the mineral and the area reserved, and sets a time limit. For example, one sq. mile reserved for one year in respect of base minerals necessitates expenditure of £1,000, while on a coal reservation of 1,000 sq. miles (the maximum), minimum expenditure must exceed £50,000. On the reservations granted to date, expenditure of well over £1,000,000 has been incurred, which is more than double the amount stipulated.

Other clauses in the Act provide for the safeguarding of existing mining rights within the area reserved. An amendment allows for a reduction of the stipulated amount, if its expenditure is proved to be unwarranted.

The acquisition of Mining Rights in Southern Rhodesia is, in any case, a comparatively simple procedure, so that an exclusive reservation is by no means essential. It serves, however, to prevent "jackalling" of any discoveries made.

The popularity of the measure can be judged from the area at present under reservation.

## GENERAL CONSIDERATIONS

The plan shows the situation of present reservations and the areas covered by others that have expired, and also the localities from which minerals have been produced in the past. It is significant that the belts of archaen rocks, which have been the centre of most mining activity to date, have been almost entirely neglected and that there are at present no reservations in respect of gold. Generally it is thought that the Gold Belts have been fairly well combed, and until the war-time and post-war appreciation in base metals prices occurred, mining in Southern Rhodesia was virtually on the decline. In 1955, however, the total value of the mineral output at £20,500,000 was a record.

The results obtained by the exploration companies are naturally confidential until such time as a reservation is cancelled, when plans and reports have to be lodged with the Government, and become available to any interested party. Where prospecting has proved pay ore, mining locations, i.e., blocks of claims, are registered in the normal way before production commences.

## RESERVATIONS GRANTED AND CURRENT (February 1, 1956)

Main mineral sought	Total No. of Res.	Current Res.	Area Sq. Mls.	Stip. expnd. £000	Ltd. Co.'s Concerned
Copper	14	6	298	66	Messina Tvl. Dev. Co.
Coal	9	2	170	30	Goldfields Rhod Dev Co. Lubimbi Coal Areas. Sabi Mining & Expl. Co.
Iron	7	3	150	37½	Messina Tvl. Dev. Co.
Tin	2	2	129	52	R.S.T. Exploration.
Nickel	2	1	17	7½	Messina Tvl. Dev. Co.
Tungsten	1	—	—	—	—
Limestone	1	1	5	5	Rhodesia Cement.
Precious Stones	1	—	—	—	—
Total	37	15	769	198	—

Reference to the plan shows activity to be confined to fairly defined areas.

## METALS IN RESERVATIONS

**Copper.**—The Messina Company is most active in the copper field. Their reservation (15) near Birchenough Bridge covers the Umkondo mine, which is now producing at the rate of 2,000 tons of copper per annum. Concentrates from this mine are road hauled almost 300 miles to their smelter in the Transvaal.

The copper bearing zone striking Northeast Southwest in Lomagundi is being well covered. N.E. of Sinoia (20) the Molly Mine is being developed, and production at the rate of 8-10,000 tons copper per annum is scheduled to start in mid-1959. Copper, on any scale, has not featured in Southern Rhodesia outputs since 1925.

**Iron.**—Orders 24 and 28 cover a mountain of iron ore known as Bukwe, situated on the new rail link to Lourenco Marques. The Messina Company holds this and is known to be on the look out for limestone, dolomite, and coal. As has been reported in *The Mining Journal*, negotiations for the purchase of the Riscorn Iron Works at Que Que, by the Messina Company, are in progress.

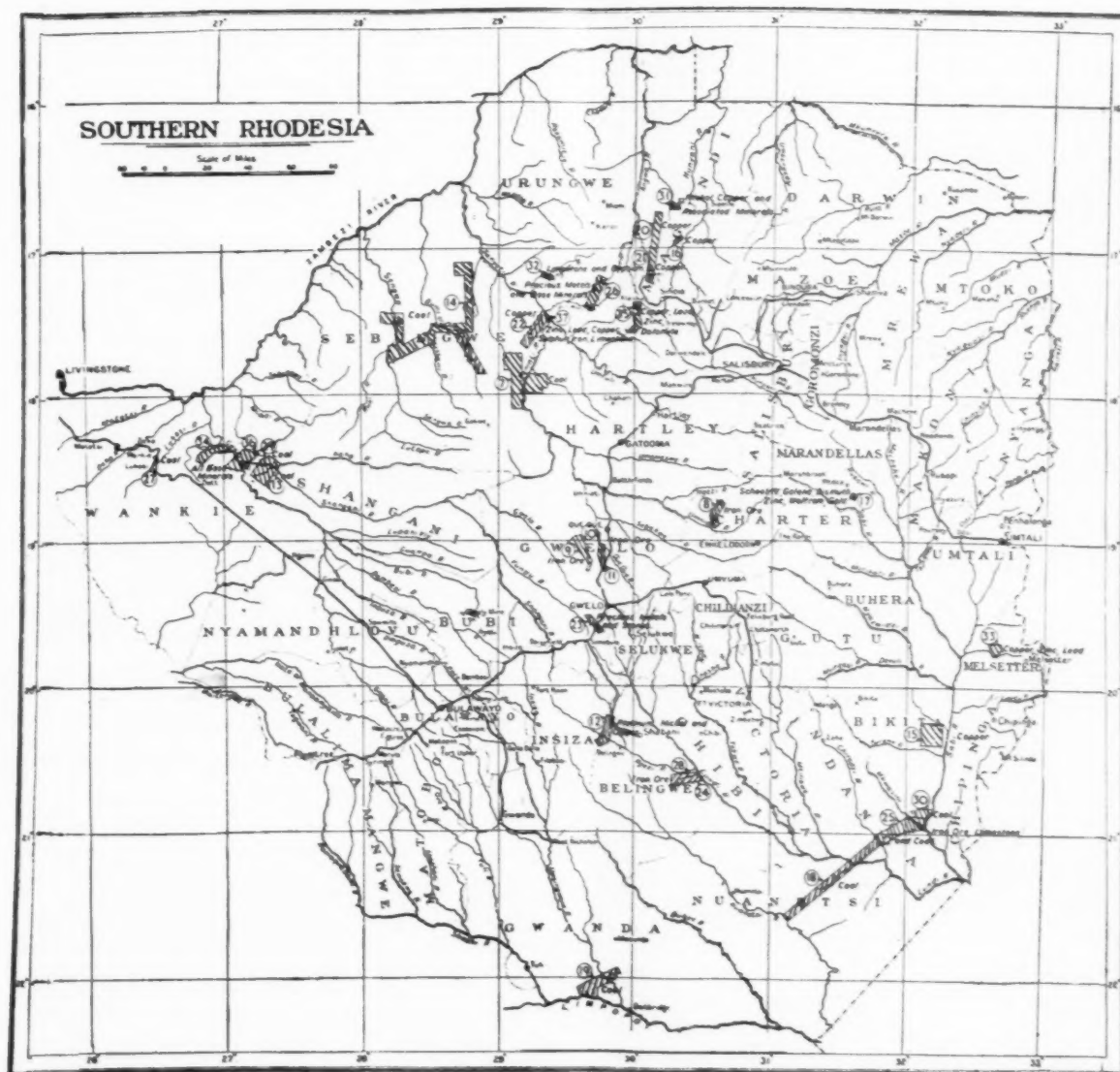
Another coal and iron area lies in the Sabi Valley (25 and 30) where the low grade coalfields known as Malilongwe and Makushwe, as well as the iron at Monyola and Mongola, are being examined by a subsidiary of Anglo Transvaal Investment Co. The coal being examined by Lubimbi Coal Area Ltd. on the Shangani River is the most accessible from the existing rail system, though not alleviating the present traffic congestion from Wankie.

**Tin.**—Rhodesian Selection Trust Exploration Ltd., a new entrant in the field, hold large areas East of Wankie on the Gwaai River. Their application covered all base minerals, but is thought to be directed to the pegmatites in the area which have produced tin, tungsten, and associated minerals

(Continued on page 328)

## EXCLUSIVE PROSPECTING RESERVATIONS IN SOUTHERN RHODESIA

Shaded areas indicate location of reservations granted



E.P.O. No.	Name of Company	Date of Expiry	E.P.O. No.	Name of Company	Date of Expiry	E.P.O. No.	Name of Company	Date of Expiry
3	Rhodesia Copper Ventures Ltd.	New No. 16	15	Messina (Tvl.) Development Co. Ltd.	31. 5.56	28	Messina (Tvl.) Development Co. Ltd.	31. 3.56
4	Rhodesia Copper Ventures Ltd.	Included in No. 5	16	Rhodesia Copper Ventures Ltd.	31. 7.54	29	Luhimbi Coal Areas Ltd.	31. 3.56
5	Rhodesia Copper Ventures Ltd.	1.5.53 (New No. 20)	17	Somerset Syndicate	9.11.54	30	Sabi Mining & Exploration Co. Ltd.	31. 3.57
6	Rhodesia Copper Ventures Ltd.	1.5.53 (New No. 21)	18	Messina (Tvl.) Development Co. Ltd.	10.11.54	31	Messina (Tvl.) Development Co. Ltd.	31. 5.57
7	William Baird & Co. Ltd.	10.6.52	19	Goldfields Rhodesian Dev. Co. Ltd.	30. 4.56	32	Rhodesia Cement Ltd.	30. 6.57
8	Rhodesian Iron and Steel Commission	1.10.52	20	Rhodesia Copper Ventures Ltd.	30. 4.56	33	Anglo American Rhodesian Mineral Exploration Ltd.	22. 9.55
9	Rhodesian Iron and Steel Commission	30.11.53	21	Rhodesia Copper Ventures Ltd.	30. 4.56	34	Rhodesian Selection Trust Exploration Ltd.	30. 9.57
10	Rhodesian Iron and Steel Commission	1.12.52	22	Sebungwe Mines & Exploration Ltd.	31. 5.55	35	Messina (Tvl.) Development Co. Ltd.	31.10.57
11	Rhodesian Iron and Steel Commission	1.12.53	23	Harry Rose Mines (Pvt.) Ltd.	22. 2.55	36	Rhodesian Selection Trust Exploration Ltd.	30.11.58
12	Wedra Syndicate	30.11.53	24	Messina (Tvl.) Development Co. Ltd.	30. 9.56	37	Messina (Tvl.) Development Co. Ltd.	30.11.57
13	Luhimbi Coal Areas Ltd.	16.12.53	25	Sabi Mining & Exploration Co. Ltd.	30. 9.56			
14	William Baird & Co. Ltd.	10. 6.52	26	Frobisher Ltd.	22.11.54			
			27	Entuba Coal Co. (Pvt.) Ltd.	23.12.54			



in the past. The nearby Kamativi Mine is being operated by Billiton, and is now producing tin metal.

**Nickel.**—So far no worthwhile nickel has been worked in the Colony and the sum of recorded production to date amounts to less than £40,000 in value.

The occurrence north of Sinoia (31) has proved disappointing. A diamond drill hole (12) put down to over 4,000 ft. through the Great Dyke was also negative. The Great Dyke runs from N.W. of Sipolilo on an almost direct and unbroken line to a point approximately halfway between Belingwe and West Nicholson. Application for an E.P.O. over 90 sq. miles at Ngondoma, 40 miles west of Gatooma has recently been made. There, a gabbro containing some disseminated nickeliferous and cupriferous pyrrhotite is being drilled.

**Limestone.**—The limestone reservation 32 was made by the Rhodesia Cement Co. with the demands of Kariba Dam construction in view. A new limestone deposit of cement grade has been recently discovered near Salisbury; production from this source by Salisbury Portland Cement Ltd. will take place early in 1957.

**Tungsten.**—Lead is being produced by the syndicate, granted reservation 17—for scheelite, galena, bismuth, lime, gold, wolfram and silver.

R.S.T. Exploration have an option on a large low grade scheelite occurrence in the N.E. Darwin area where the Ball Mine produces an average of 5 tons monthly of scheelite concentrates. East of Karoi, disseminated wolfram, originally discovered five years ago, has been proved by small scale operations to extend for over five miles.

#### REGISTRATION OF CLAIMS

The following table shows a comparative statement of prospecting licences issued, blocks registered, abandoned or forfeited inspected, transferred and current:

	1953	1954	1955
Prospecting Licences Issued .....	3,510	2,919	3,135
<b>BLOCKS REGISTERED</b>			
Precious Metals .....	267	309	258
Precious Stones .....	10	1	1
Base Minerals .....	1,463	1,015	1,169
<b>BLOCKS ABANDONED AND FORFEITED</b>			
Precious Metals .....	479	548	413
Precious Stones .....	9	2	—
Base Minerals .....	949	1,287	622
Platinum .....	—	—	—
Coal .....	106	—	2
<b>BLOCKS CURRENT AT 31st DECEMBER</b>			
Precious Metals .....	3,330	3,086	2,931
Precious Stones .....	3	2	3
Base Minerals .....	7,288	7,017	7,564
Coal .....	16	16	14

A measure of activity can be assessed from these statistics.

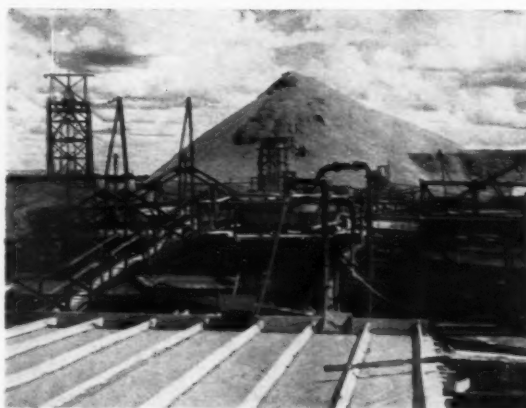
#### COMPARATIVE STATEMENT OF BASE MINERAL BLOCKS (CURRENT DECEMBER 31, 1953, 1954, AND 1955)

Mineral	1953	1954	1955	Mineral	1953	1954	1955	Mineral	1953	1954	1955
Aluminium .....	52	51	51	Ilmenite .....	1	1	13	Pyrrhotite .....	—	1	6
Andalusite .....	—	—	1	Iron .....	223	184	289	Quartz .....	6	8	12
Antimony .....	12	26	22	Kaolin .....	8	7	8	Rutile .....	1	1	1
Asbestos .....	1,637	1,307	1,195	Kyanite .....	3	3	22	Salt .....	1	—	—
Barium .....	—	—	5	Lead .....	19	24	33	Silica .....	2	—	1
Barytes .....	6	5	1	Limestone .....	209	227	307	Talc .....	1	—	—
Beryl .....	533	403	416	Lithium .....	27	56	89	Tantalum .....	48	49	50
Betafite .....	—	—	1	Magnesite .....	21	21	23	Tin .....	255	265	262
Bismuth .....	2	1	1	Manganese .....	8	2	20	Tungsten .....	331	243	345
Calcite .....	2	4	2	Molybdenum .....	10	4	9	Uranium .....	13	14	15
Chrome .....	3,172	3,343	3,494	Monazite .....	98	2	1	Vanadium .....	—	—	1
Copper .....	160	162	290	Mica .....	231	215	166	Vermiculite .....	22	21	21
Corundum .....	11	13	11	Nickel .....	48	217	250	Zinc .....	34	34	43
Dolomite .....	1	—	—	Ochre .....	2	2	2	Zirconium .....	—	1	1
Fireclay .....	7	51	35	Olivine .....	3	3	3				
Fluospaer .....	2	3	4	Phosphates .....	35	35	34				
Graphite .....	1	—	—	Pyrites .....	10	8	8	<b>Total</b>	<b>7,268</b>	<b>7,017</b>	<b>7,564</b>

**Asbestos.**—Production of asbestos for 1955 was over £7,000,000 in value, and exceeded that of gold. The coming into production of the John Mansville Temeraire property has contributed to this, though generally there has been a lessening in asbestos interest as is evidenced by the considerable decrease in the number of blocks held.

**Chrome.**—Though chrome to the value of £3,000,000 was produced in 1955, this figure could have been increased by 25-30 per cent if the Railways had been able to carry the traffic. The number of blocks held is increasing steadily and now covers an area of 300 sq. miles—nearly all along the Great Dyke.

A similar ultra basic dyke has been discovered in the Zambesi Valley. Application is being made for an E.P.O. over this occurrence.



Blanket tables and part of the reduction plant at the Cam and Motor gold mine

**Lithium.**—Interest continues in lithium minerals. A trial lot of Eucryptite features in the year's outputs which total £333,333 in value.

**Mica.**—Production was lower in 1955, but there was a renewal of interest in the mica fields during the year, engendered by Rhodesia Mica Mining Company's purchase of Grand Parade Mines comprising 74 blocks of claims. An increase in production in 1956 is expected.

**Gold.**—The gold situation can only be described as moribund generally, with the lower grade properties gradually becoming unpayable. Government assistance has been promised for three so far unnamed mines. The Lonrho group reports, however, show promise for the Cam and Motor at depth and record excellent developments at Arcturus. The number of smallworkers in this field continues to diminish.

## Silicones in the Mining Industry

Silicones are becoming increasingly important to the mining industry, notably as insulating materials for motors and transformers. They are manufactured by Midlands Silicones Ltd. at Barry, South Wales, in a 26-acre plant employing over 300 workers, which came into operation in 1954.

Basically, silicones are organic compounds of silicon with a structure of alternate atoms of silicon and oxygen. In this respect they are related to such inorganic materials as glass and mica. Organic groups are attached to the silicon atoms. By varying the basic silicone structure and the attached organic groups many different products can be made, including fluids, resins, elastomers, greases, and water-repellant products. In spite of variations in composition and form certain properties are common to all silicones, notably stability to heat, cold and oxidation. Many silicone resins, rubbers and fluids can be used at 250 deg. C. while, for application at the lower extreme, there are other fluids with freezing points of -86 deg. C. and rubbers with brittle points below -90 deg. C.

Silicone insulants are far more heat stable than organic insulating varnishes used in Class B insulation and have good dielectric properties, together with a high degree of water repellency and chemical inertness.

The life, reliability and loading of electrical machinery depend primarily on the quality of the insulation. The limit to temperature rise in windings is usually determined by the thermal endurance of the insulating varnish or binder for such heat stable materials as mica, glass fibre, or asbestos. The higher the temperature rise, the shorter is the life and reliability of the insulation. Silicone resins and elastomers combined with mica, glasscloth and asbestos have led to a new class of insulation that will withstand operating temperatures at least 50 deg. C. above Class B insulation limits. It is known as Class H insulation and was introduced by the American Institute of Electrical Engineers, who provisionally limited the permissible hot-spot temperature to 180 deg. C. For Class B insulation the comparable temperature is 130 deg. C. It is anticipated that Class H will receive international acceptance in the near future.

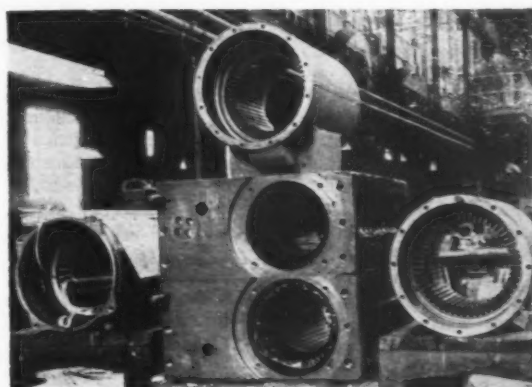
### SILICONES IN MINING

In the mining industry, where many operations are dependent on electric motors, insulation failure—which accounts for a high proportion of all failures—can have serious consequences in terms of loss in production and man hours. Many motor insulation failures can be attributed to the effects of water.

Silicones impart their high water-repellency to materials in which they are incorporated. This means that silicone-bonded insulation maintains good insulation resistance under moisture-condensing conditions. For instance, after seven days at 100 per cent relative humidity at 25 deg. C., a 7½ h.p. induction motor winding had an insulation resistance of greater than 10 megohms. It is an important feature of silicone insulation that even after prolonged exposure to water it dries out rapidly from the wet condition to regain high values of insulation resistance, which are fully restored by simple air drying.

These properties are of particular value in wet pits and other situations where electrical equipment is exposed to a high degree of moisture in the atmosphere or to flooding. Silicone insulated coal-cutter and conveyor motors are now working in British coal mines under wet and adverse conditions. Some colliery engineers already specify silicone insulation for all rewinds.

Because of its obvious advantages both as a dielectric and a coolant, oil has been used in transformers for many



A group of coal cutter and conveyor motor slaters in various stages of construction at the Newcastle branch of British Electrical Repairs Ltd.

years, but it constitutes a fire risk which, in some situations, should be avoided or at least minimized.

In general, air-cooled transformers installed for the purpose of minimizing fire risk are insulated with Class B materials, such as mica and asbestos, in built-up form with binding cement. Such materials allow for an average transformer winding temperature rise of 75 deg. C., which compares with 55 deg. C. for Class A insulated windings, but they are not particularly suitable for installation in situations where the cooling air is likely to be dirty and moist.

It is claimed that Class H insulated transformers can be designed to have higher efficiency than ON transformers of equal rating and can be installed in locations unsuitable for conventional air-cooled transformers, because the insulation is not affected by moisture or dust in the atmosphere. After being left indefinitely in situations of maximum humidity, they can be energized with perfect safety. Unless cooling air is filtered dirt must accumulate inside the ventilated casing, but the glass-like surface of the coils minimizes the amount of dirt and contaminants that will be collected.

In some countries, notably Germany, silicon insulated transformers of the air-cooled type are being used in collieries. Since no oil is present they are explosion- and fire-proof and can be taken closer to the coal face, resulting in a tremendous saving in working costs.

### AN ANTI-CORROSION MEDIUM

A material which is finding a number of valuable applications in the mining industry is a grease known as silicone insulating compound MS4, which is suitable for operating temperatures within the range—50 deg. C. to 200 deg. C. Applied as a coating to cables and cable connections it inhibits moisture absorption with consequent swelling and at the same time prevents corrosion of metal. This material is also used to prevent flashover in gate-end switch gear, to seal out moisture from terminal boxes, to prevent electrolyte creepage in the batteries of miners' hats, and for any other purpose where a highly water-repellant compound is desirable. As an indication of the increasing demand for this material, it is stated that in 1955 sales of MS4 increased by more than 600 per cent.

# Current Progress in the World Coal Mining Industry

The general trend of the world's coal mining industry is directed towards increased production, particularly in Europe, where demand continues to outstrip supply. In the following article our Coal Correspondent presents a summary of the coal position in the United States, the United Kingdom and Western Europe at the end of 1955, emphasizing the drop of British production during that year, a factor that may yet precipitate an economic crisis.

With final 1955 coal production returns coming in, the general trend is seen to be towards increased production. In this respect the outstanding feature is the resurgence of the American bituminous coal industry where industrial expansion at home and abroad has provided a welcome market for U.S. coal. Output last year rose by almost 70,000,000 tons over the preceding year to 420,000,000 tons. The European fuel shortage has proved a godsend to U.S. exporters who enjoyed a fruitful year. Thirty-five million tons were exported during the year, most of which went to Europe where the biggest customers were Italy, Holland, Britain and West Germany. The U.S. anthracite industry continued its downward path and output dropped eight per cent compared with the 1954 figure of 27,000,000 tons.

Even in fuel-rich America, thought is being given to the problem of maintaining ability to satisfy accelerated demand for coal. Some authorities have indicated that capacity last year was only 10 per cent above actual output. Unless substantial expansion within the industry takes place this excess capacity will be totally inadequate to cope with the anticipated 600,000,000 ton yearly demand by 1960. It has been estimated that over the next decade some 50 large new units will have to be brought into production and 50 others that will have been depleted will have to be replaced if demand for coal is to be satisfied. Almost \$1,500,000,000 are likely to be spent over the next ten years on providing new capacity and making good the wastage in this period. Due to the waiting period between starting a new mine and the attainment of normal production, now is the time to undertake large scale development projects. Typical of these is the \$20,000,000 new mine being constructed for the Pittsburgh Consolidation Coal Co.—the third large mine to be opened by this company which is the largest commercial coal producer in the U.S.

Output per manshift in the U.S. continues to rise and at 10 tons is almost twice the pre-war figure. Further improvements in machines and mining techniques are expected to boost the present O.M.S. by 50 per cent over the next five years. Truly a staggering accomplishment.

## GREAT BRITAIN

The National Coal Board recorded a drop of over 2,000,000 tons on last year's operations, despite a record opencast production. The deep mined output trailed almost 3,500,000 tons behind the previous year and only two of the nine divisions showed improved figures. Although not unexpected this failure provides yet a further indication of how mining is lagging behind other British industrial activities. Despite mechanization and improvements in haulage and winding, etc., the benefits which should accrue are being negated by a general slackening of effort. It is not sufficiently realized that whilst machines are designed to reduce manual effort they cannot entirely replace hard work. The aim of mechanization is greater productivity for a fair days' work and not equal output for less work.

What the situation will be in the current year if the miner's demand for shorter hours and more pay is accepted is a matter of some concern. Perhaps the recently appointed

Minister of Fuel and Power and the new Chairman of the Coal Board will find a solution between them. One thing is certain; a firm hand is needed if Britain's miners are not to precipitate an economic crisis. Considering the money that has been poured down the shafts in recent years the results to date have been pitifully disappointing.

## WESTERN EUROPE

Although coal production in the European Coal and Steel Community reached the highest ever figure of 336,000,000 tons in 1955—a gain of 4,000,000 tons—demand continues to outstrip supply. Shortage of miners is curtailing expansion within the Pool countries and this scarcity is likely to prove the limiting factor in the plans to boost production in the next few years. In an attempt to stop the drift from the mines the High Authority in Luxembourg have sanctioned a nine per cent increase in workers wages. A request by the Ruhr coal owners to raise the price ceiling of German coal by three marks a ton to counterbalance this wage increase was turned down by the High Authority. A new situation will arise after April 1st when the Ruhr Sales Cartel will have been re-constituted. There will then be no formal pretext for maintaining a maximum price structure in the Ruhr unless pressure of demand necessitates the extension of new price schedules throughout the community.

In order to give some assistance to the West German coal industry the Federal Government has approved financial relief measures. These include a cut of almost 50 per cent in the social insurance contributions to be made by the mines and a tax free bonus of two marks a shift for underground investment by the mines. Together with other remissions the total benefits should be of the order of four marks a ton. Presumably this internal financial manipulation, which gets round the High Authority's decision of peg the selling price of coal, is in accordance with the rules of the E.C.S.C.

Delivery has commenced of Russian coal for Austria. This coal can be delivered to the border for \$22.50 per ton compared with the price of \$28 per ton for the American coal formerly used. As mentioned in previous issues of *The Mining Journal* high freight charges on coal from the U.S. is causing many countries to look elsewhere for fuel supplies. Whilst these Russian deliveries are more or less only trial orders it seems probable that a considerable tonnage will be exported from Russia this year.

## ARCTIC COAL

Coal production in the Norwegian mines in Spitsbergen—only 600 miles from the North Pole—is to be doubled in the next five years. Output last year was about 300,000 tons, all from the mines at the Longyear City Settlement. It is proposed to raise this to 400,000 tons and to re-start production at the King's Bay Mines at the rate of about 200,000 tons per year. The Norwegian Government is to be asked to vote £1,000,000 for the King's Bay project. It is expected that the increased output will be largely used for the steel plants in North Norway.



## MACHINERY AND EQUIPMENT

### A Range of Pumps for Mining Application

The pumps manufactured by the British La Bour Pump Co., Ltd., have a wide variety of applications within the mining industry, while in addition alloy K26 has been specially cast for incorporation in the units. Indeed, K26, developed by the Labour Co. Inc., United States, is intended to supplement the alloy R55. The new alloy is possessed of physical and mechanical properties which approximate those of the conventional stainless steels, and can be used under many abrasive and corrosive conditions for which R55 formerly would have been specified. These alloys, therefore, can be used in the manufacture of the entire range of La Bour pumps.

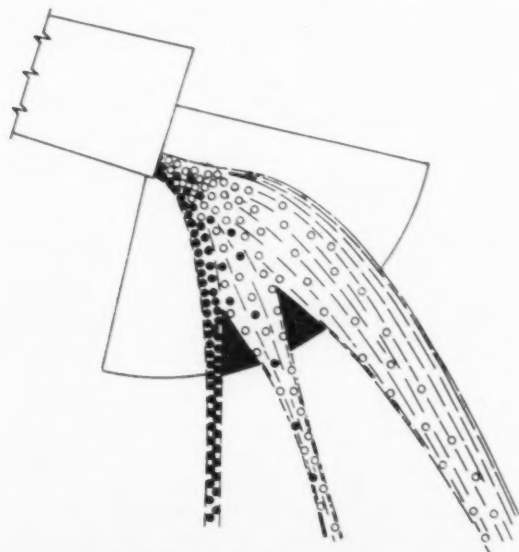
The Type B.G. is a vertical, self-priming centrifugal pump that improves on previous features but eliminates the contact type of seal. In the Type B.G. the motor is coupling connected with bearings sealed against the entrance of fumes. In the Type B.G.M. pumps no bearing bracket is employed. Except for the driving arrangement and the resulting difference in overall height, the Types B.G. and B.G.M. are identical in design and construction.

The Type D.Z.T. horizontal non-priming centrifugal pumps are so designed that no volute is required. As the impeller constantly sweeps the casing it is claimed as impossible for the pump to become air or gas bound as long as the liquid flows to the pump and the discharge line is free from obstructions. The Type Q horizontal non-priming centrifugal pumps have multiple internal discharge throats, each of which is kept independent of the others, thus producing in effect several independent pumps working in parallel.

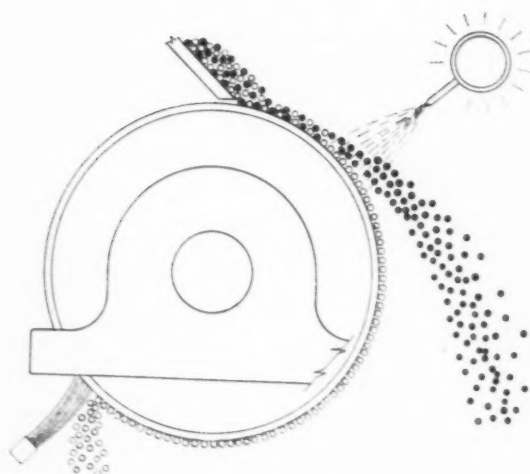
### Developments in Mineral Treatment Plants

The need for a simple and lightweight apparatus to provide gravity concentration of ores led to the development of the Fanning Concentrator by Carpco Engineering and Manufacturing, United States. This new invention has no moving parts and is claimed to give high grade concentrates at high recoveries. In operation, the stream of material discharged from the sluice is fanned out on a rubber coated plate. Tailing, middling and concentrate portions of the fanned out mineral stream are separated by neoprene wedges to yield separation products.

The Fan Concentrators are small units—a plant handling 65 tons per hour through three stages of fan concentration is



The Carpco Fanning Concentrator



Operating principle of the high tension separator

arranged in an area 22 x 31 x 7 ft. for example—and are so designed that the fan may be placed in either the right or left hand position. The inside surface of the sluice is covered with  $\frac{1}{8}$  in. thick neoprene, while the outer surface of the fan is covered with  $\frac{1}{8}$  in. thick white neoprene to allow for visual inspection. By adjustment of the pinched sluice the size range of the material handled is broadened, and crushed minerals at 8 mesh are quite easily separated.

During recent years mineral separation by gravity concentration followed by high voltage separation and then magnetic separation has been employed in relation to a widening group of minerals. Plants using this basic flowsheet are producing ilmenite, chromite, garnite, scheelite, staurolite, wolframite, monazite, zircon, columbite, rutile, etc.

Carpco High Tension Separators are designed to accommodate sand-like materials from 8 to 250 mesh in size. With heavy, sand-like materials the capacity of the industrial units—namely those having 60 in. long rotors—is approximately 2½ tons of feed per rotor per hour. A typical mill installation using these separators has a feed capacity of 1,000 tons of material per day using seven units as roughers, four as scavengers, three as cleaners and one as a recleaner.

The industrial model series M.I. high intensity induced roll Magnetic Separators manufactured by Carpco are of unitized design, each unit consisting of a single separating rotor operating in a complete magnetic circuit. As such, each unit is a complete magnetic separator in itself. Operating three units as a single machine with a single base and drive, optimum metallurgical results can be obtained by using a top rotor as a rougher and the middle and bottom rotors as magnetic and non-magnetic product recleaners.

The machines are designed to saturate the core pieces at 100,000 lines of force p.s.i. An over-saturated condition exists, however, in the mineral separation air-gap of 176,000 lines of force p.s.i. at maximum flux settings, giving a total of 3,600,000 lines of force available for mineral separation on each rotor.

### Scottish Firm to Manufacture Control Desks

W. and H. Nelson Ltd. are now manufacturing desks for remote electrical control systems for mining and industrial use. In addition to supplying desks to operate in conjunction with their own range of electrical equipment, Nelbest control desks have already been installed in various mining and industrial electrical schemes.

## MINING MISCELLANY

So far no large deposits of uranium have been found in the Central African Federation, though there are promising indications, states the Salisbury office of the U.K. Atomic Energy Authority. The chief purpose of the office, which is financed by the U.K., is to help private individuals and companies and to undertake its own surveys as opportunity offers. According to the Geological Survey of Great Britain, Northern Rhodesia is the area in the Colonial Empire most likely to contain uranium, since it is adjacent to the rich Shinkolobwe deposit in the Belgian Congo.

Proposals for mining developments registered with the Ministry of Mines and Petroleum, in Colombia, have included several of more than usual interest. Three concerned asbestos, manganese and barytes, and four uranium in the department of Santander and North Santander. A Radioactive Mineral Code, promulgated on October 6, governs the exploitation of these minerals and also establishes a Colombian Nuclear Institute charged with controlling their extraction and sale, and with carrying out Colombia's obligations under the Atomic Agreement with the U.S.

In pursuance of its policy of assistance to small miners, the Mining Bank of Peru recently opened its fifth concentration plant. The plant, which is situated at Ton Suyco in the Province of Lima, is able to treat some 80 tons per day of lead, zinc and copper ores from the 40 small mines which exist in the district.

Owing to the high world price for tin Thailand's industry is flourishing and small mines with low yields have re-opened and are showing profit. A British concern has re-opened its mine in Yala Province, the only lode mine of importance in the country. Started 17 years ago, it is likely to make a significant contribution to the amount of ore produced. A joint Anglo-Thai venture is expected to start grabbing (instead of the more usual dredging) for tin in the sea of Phuket during 1956.

It is anticipated that Egypt's draft law controlling mining and prospecting will be approved and promulgated within the next few weeks. It is understood that the law deals mainly with mines and quarries, but one very important clause concerned with petroleum cuts across Law No. 66 of 1953 by giving the Minister of Commerce and Industry the right to negotiate the grant of concessions on conditions other than those laid down under Article 69 of Law No. 66 of 1953, which gave him this right for one year only. The draft law abolishes royalty payments by mining concerns, but not in respect of quarries or petroleum producers.

Minera Celdran S.A., a mining firm of Cartagena, province of Murcia, has been authorized by the Direccion General de Minas to build a smelter for blende processing. The new installation would treat 40,000 tons of blende per year and the company hopes eventually to produce 18,000 to 20,000 tons of electrolytic zinc annually. The total costs of the plant, which will be run by Minera Celdran in co-operation with the Banco Central and financial groups from Bilbao, will amount to approximately 300,000,000 pesetas.

The Boliden Mining Company has decided to build a new copper works adjacent to its present plant at Ronnskar in North Sweden. It is estimated to cost about Kr. 14,000 (£965,500) and will be completed in a couple of years. The works is planned for an annual output of 30,000 tons.

### PERSONAL

Mr. E. E. G. Boyd has been appointed managing director of Mount Morgan. Mr. Boyd will also remain deputy chairman.

Mr. T. Benson Gyles has joined the Atomic Energy Authority and is concerned with the exploitation of permissible inventions in the industrial field generally.

Mr. H. A. Crowe has resigned as a director of South Bukuru Areas Limited and Mr. J. A. Weatherley has been co-opted as a director.

The following appointments have been announced by the General Mining and Finance Corporation Limited: Mr. Jack Scott to the Boards of Brinkpoort Gold Syndicate Limited, General Exploration Orange Free State Limited, South Roodepoort Main Reef Areas Limited and West Rand Consolidated Mines Limited; Mr. C. S. McLean to the Board of Stilfontein Gold Mining Company Limited; Mr. E. L. Lloyd to the Board

of Eastern Rand Extensions Limited; Mr. H. C. Payne to the Board of the New Pioneer Central Rand Gold Mining Company Limited; and Mr. C. W. Roper to the Board of Lydenburg Platinum Limited. Mr. T. W. T. Baines has resigned from the Board of West Rand Consolidated Mines Limited.

Mr. Felipe Seleme, Vice-President of the Bolivian Mining Corporation, the Government agency operating the mines taken over from the Patiño, Aramayo and Hochschild interests, is leaving New York by air for a buying trip to West Europe. Mr. Seleme has been in the United States for about a fortnight in search of mining equipment for the agency's tin and tungsten mines. He plans to visit the site of a pilot melter plant in Germany built by Krupps for Bolivia.

Mr. Robert P. Koenig, president of Cerro de Pasco Corporation, is in Chile, where he is completing arrangements for the exploration of the Rio Blanco Copper mine near Santiago. The programme calls for diamond drilling of a minimum of 9,000 to 10,000 feet from underground stations at the mine. Cerro de Pasco Corporation has an option until October 1 to buy all the stock of the Compania Mineral Rio Blanco, Ltda., which has the mining concessions in Chile. Rio Blanco Copper Corporation, Ltd., a Virginia Corporation, is the present owner of this stock. The Rio Blanco mine is reported to have about 27,800,000 stons of proved reserves averaging 2.2 per cent copper content, and possible additional reserves of between 50,000,000 and 70,000,000 tons of ore.

The Institute of Metals will hold its Spring Meeting in London from Tuesday to Friday, April 10-13, 1956.

The 1956 Convention and Exposition of the American Mining Congress will take place at Los Angeles on October 1-4.

Exhibits showing some of the work on atomic energy which is being carried out by Imperial Chemical Industries Ltd. will be on view in the Electrical Section of the British Industries Fair, in April.

The Production Exhibition and Conference will be held at Olympia, May 23-31. Its purpose is to show some of the research and development which lie behind Britain's production achievements.

The Ross Institute of Tropical Hygiene will hold its course for laymen in Tropical Hygiene from July 16 to July 20 inclusive.

### CONTRACTS AND TENDERS

India—TEN/18258A, open cast mining equipment. (*Mining Journal* 9/3/56, p. 295). The Export Services Branch, B.O.T., has received a copy of the tender documents. B.O.T. Ref.: E.S.B./5378/56. Telephone enquiries to Chancery 4411, Extension 738 or 171.

The International Co-operation Administration (I.C.A.) has announced the following authorization:

Korea	Contract Period	Terminal Delivery Date	Amount (in U.S. dollars)
Non-metallic minerals (except petroleum) and non-metallic mineral products (PA No. 89-99-A6-6281) .....	13/2/56-31/8/56	31/8/57	190,000
B.O.T. Ref.: E.S.B./6314/56/I.C.A.			

The following authorizations for Korea, previously announced, have been amended to increase the dollar value and extend contract and delivery dates. In each case the amended contract period is 1/12/55-31/7/56 and the new terminal delivery date 31/10/56. The amended dollar values are as follows:

PA No. 89-691-99-A6-6232 .....	\$640,000
PA No. 89-696-99-A6-6233 .....	\$512,500
PA No. 89-696-99-A6-6230 .....	\$379,500
PA No. 89-695-99-A6-6231 .....	\$62,500
PA No. 89-698-99-A6-6229 .....	\$49,500
B.O.T. Ref.: E.S.B./6497/56/I.C.A.	

Telephone enquiries to Chancery 4411, Extension 360.

This information is supplied by the Special Register Information Service of the Board of Trade, Lacon House, Theobalds Road, London, W.C.1.



## METALS, MINERALS AND ALLOYS

**COPPER.**—Copper has remained extremely firm during the past week on both sides of the Atlantic. In the United States the forecast rise in the quotation of the big producers has still not taken place and some consumers think it is now less likely. But Revere Copper and Brass has announced that the prices for its copper products are being raised by 3 c. per lb. with the new prices based on a copper price level of 49 c. per lb. The last time this firm raised its prices was when the big copper producers put their quotation up to 46 c. This is being taken by other observers to mean that a fresh rise to 48 c. or possibly more is on the way. Meanwhile, against the 46 c. quoted by the E. & M.J., custom smelters have been asking 54 c. for March, April and May and dealers 55 c. for immediate metal. No. 2 scrap copper has been quoted at 44.50 c. for immediate delivery and has been coming out in good quantities.

Obviously this whole situation will be transformed if the strike, which now appears to threaten in the Copperbelt, eventuates. The Chamber of Mines and the European Mine Workers' Union have failed to reach agreement on the Union's claim to represent cementation workers employed by contractors at Bancroft. A small strike has already taken place on this issue and Mr. Jack Purvis, chairman of the union, has said that there is a danger of the strike spreading throughout the Copperbelt.

Deliveries of copper to the national stockpile scheduled for June 30 have been postponed to December 31, 1956; the deferments total 43,000 tons—27,000 domestic and 16,000 Canadian metal.

From Chile it is reported that the Copper Department has given authority to American firms to increase their investment by \$57,000,000. Anaconda will invest \$52,000,000 in developing the Dead Indian or El Salvador deposit of 80,000,000 tons; and another 1,050,000 at Chuquimata on a modifying unit for an electrolytic refining plant. Kennecott at El Teniente will invest \$190,000 to step up output of blister and fire-refined copper. At Potrerillos output is said to be increasing from access to richer ores than those now being fed to the plant. The Chilean Ministry of Mines estimates that 1956 output will be 430,000 tons against 391,400 tons reached in 1955. The 1955 target was 420,000 tons. The 1955 output from the smaller Chilean mines is estimated unofficially at around 25,000 tons. The International Monetary Fund is to lend \$30,000,000 to help establish a currency stabilization fund. Another \$70,000,000 will be sought in the United States from banks. It is not clear how big the fund will be or how it will operate. It is worth pointing out that since the wage and price freeze the market standing of the peso has been much enhanced.

**LEAD.**—Lead has been an active market in the past week in the United States on the basis of 16 c. per lb. New York. Demand has been good but there is no sign of any shortage of metal developing. In fact the latest figures show that smelters' and refiners' stocks of refined lead were up on February 1 to 24,080 tons against 21,196 a month earlier. Smelters' receipts of lead in ore and scrap declined sharply in January to 49,234 tons against 56,649 tons in December. The decline was caused primarily by a sharp drop in imported ores from 24,136 to 15,704 tons. At present the only disturbing prospect is the possibility that the strikes in the Australian docks will be resumed.

**TIN.**—Tin was inclined to lose in value in the latter part of last week in New York in sympathy with an easier trend in London. In the first part of this week the market rallied again to 102 cent per lb. but fell back to 101.37 for spot straits metal chiefly in view of the serious state of affairs in the Middle East and Eastern Mediterranean. Dealers and consumers were then both active in the market. Mr. R. J. Nekervis, head of the Tin Research Institute of Columbus, Ohio, said that the United States had consumed 8 per cent more tin in 1955 than in 1954 and would consume a further 5 per cent in 1956. He said "It's probable that there will be a further reduction in hot-dipped tinning in favour of electrolytic, which uses less tin, but the ratio of electrolytic to hot-dipped is gradually being stabilized and the overall consumption of tin is increasing." He added that the tinless can was still too expensive and that while America could get tin she would continue to use it.

A further meeting will be held at Ipoh on March 15 to discuss the dispute in the Malayan tin industry. The original dispute concerned the backdating of the seventh day of rest agreement but this has got sidetracked during the dispute.

**ZINC.**—Zinc has been a fairly active and always steady market on the basis of 13.50 c. per lb. East St. Louis for prime

western grade. At the beginning of this week there was a strong demand for prime western by galvanizers although the call for the special high grade has not been as high as in recent weeks. Mr. Maurice Schwartz, of Pacific Smelting, said the use of special high grade was expected to increase by a few lb. a car and this would keep demand up to 1955 level even if car manufacturers fell away. He added that any drop in steel output would cause a fall in demand for prime western grade galvanizing.

Canadian output of zinc in 1955 was 428,474 tons against 376,491 in 1954.

**ALUMINIUM.**—Aluminium Ltd. has announced its willingness to take an interest in a proposed smelter in French Guinea, the construction of which is being studied by Pechiney, the leading French aluminium company, in association with other European producers of aluminium. Bauxite du Midi, a French subsidiary of Aluminium Limited, is mining bauxite on an extensive scale in French Guinea. The company has been making studies of the feasibility of building new plant and other facilities to mine bauxite more extensively and extract alumina. The new project provides for a power dam on the Konkoure River supplying power for an annual aluminium production of 250,000 to 300,000 tons. Should it materialize, aluminium will be participating in the venture of AFRAL (Société Européenne pour l'Etude de l'Industrie de l'Aluminium en Afrique) in which Italy's Montecatini, Germany's Vereinigte Aluminiumwerke and Switzerland's Société Anonyme pour l'Industrie de l'Aluminium, have joined the two French companies Pechiney and Ugine. Costs for the Konkoure project are estimated at 120,000,000,000 frs.

The sharing of the aluminium output among the different participating companies, customs duties to be levied in member countries, and guarantees from the local administration not to raise power prices or taxes and to admit the equipment to be used for the plant free of duties, are the main questions to be resolved before a final decision to start operations can be taken.

**NICKEL.**—New records were established last year by International Nickel for net earnings, dividend payments, deliveries of nickel to the free world, and ore mined underground, while the company's deliveries of platinum metals and of cobalt were also the highest for any year in its history. The annual report states that INCO is further expanding its research and sales activities to contribute to the growth of future markets, and is simultaneously pushing forward its exploration and mine development programmes. The company's mill product shipments were about the same as in 1954, but its rolling mills in the U.S. and the U.K. were again compelled to operate below capacity because of inadequate supplies of nickel.

Nickel demand is expected to continue at high levels throughout 1956. Defence requirements for nickel will remain high, but on the other hand, total free world nickel production should again increase and in the U.S. nickel diversions to industry from the scheduled intake for the stockpile should be higher than in 1955. The total supply for civilian industry is therefore expected to be larger this year, although still falling short of meeting fully the anticipated demand. Product research continues to be directed towards future markets. Among the company's research projects is the development of nickel alloys having properties suitable for use at high temperatures and pressures beyond the limits of conventional materials. Steps have been taken to extend research activities in the field of atomic energy.

**TITANIUM.**—The emergence of Japan as an important factor in the world production of titanium metal is underlined by the news that the Japanese titanium industry plans to expand its output in the financial year starting in April, 1956, to 2,600 tons from an estimated 1,800 tons in the current financial year. The industry is also trying to increase sales of its products to the U.S., which takes 90 per cent of Japanese titanium production. A report from Osaka states that the Titanium Manufacturers' Association has asked the Japanese Government to negotiate with the U.S. Government for a reduction of the present 20 per cent import duties on Japanese titanium and also to "dispel undue apprehensions" alleged to be entertained by the American titanium industry regarding Japan's production programme.

Canada, too, besides being a major source of titaniferous minerals, is playing a part of growing importance in the development of titanium metal. Canadian Steel Improvement of Toronto—a member of the Hawker Siddeley group—now num-

bers among its customers two of the largest jet engine manufacturers in the American Continent. It may reasonably be inferred that this achievement is not unconnected with the improved forging technique recently developed by C.S.I. To facilitate production the company is completing a \$3,500,000 expansion programme, which includes a new forge shop with the largest forging press yet installed in Canada. It is further reported that Atlas Steel's Ltd., of Welland, Ontario, has formed a new subsidiary, Atlas Titanium, to turn out titanium mill products for the domestic industry. Dominion Magnesium, of Haley, Ontario, is reported to be working on a new titanium alloy process, while a \$15,000,000 oxide plant has been planned by Canadian Titanium Pigments near Varennes, Que., and will be completed early in 1957.

It is, of course, general knowledge that titanium's usefulness as a constructional material for aircraft, ships, chemical plants and other important applications will not be fully realized until production costs can be further reduced. At present the lead in cheapening titanium is held by I.C.I., who have brought the price down to about 83 c. per lb. The Shawinigan Water and Power Co., of Shawinigan Falls, Que., is producing experimental amounts of titanium by an electrolytic process, of which considerable hopes are entertained. The U.S. Bureau of Mines is experimenting with a new electrolytic cell method for producing high-purity metal from scrap, which should also result in cheaper metal.

Several industrial firms are now arc-welding lightweight titanium metal by using special procedures and equipment developed by the Bureau of Mines, while experiments in the Bureau's research laboratory are yielding information of value to designers in selecting metals to be employed in contact with titanium or zirconium for use under corrosive conditions. Another notable development was the dispatch of two carloads of titanium sheet from the Leeburg, Pa., plant of the Titanium Metals Corporation of America to Douglas Aircraft Company. This was the largest single shipment of titanium sheet in the commercial history of the titanium industry. Whereas, in 1950, a piece of titanium weighing several pounds was a technical achievement, ingots weighing three tons are now continuously rolled by T.M.C.A.

Yet titanium technology still lags behind the needs of the aircraft industry. This was one of the conclusions reached at a symposium held recently at the Solar Aircraft Company's plant, Des Moines. Among the points discussed by representatives of five major titanium producers with Solar executives and engineers were inconsistency of bend strength and formability of titanium sheets and the fact that supplies of special shapes and types of titanium cannot be obtained as rapidly as required by the aircraft industry. Solar-Des Moines alone is producing six major jet engine assemblies and has orders aggregating several million dollars for titanium fabrication.

Far-reaching developments are also taking place on the raw material side. National Lead has announced a 25 per cent expansion in the capacity of its ilmenite mine and mill at Tahawus, the largest operation of its kind in the world. In Australia—which already produces about 85 per cent of the world's output—an increasing number of mining companies are becoming interested in this mineral. Interest is reported to be quickening among Australian stock exchange investors in rutile producers. In South Africa Anglo American has been granted a three months' option to purchase assets owned by the Titanium Corporation of South Africa on the Natal Coast, where ilmenite is believed to exist in large quantities on the beach sands. It is understood that if the option is exercised Titanium Corporation will receive £250,000 and a 10 per cent interest should a new company be formed. In 1955, Titanium Corporation exported 2,000 tons of ilmenite. Much interest is also being taken in the reported discovery of deposits of titanium minerals between Port Elizabeth and Komgha.

## The London Metal Market

(From Our Metal Exchange Correspondent)

Prices on the London Metal Exchange have remained very steady during the past week, and the only points to note have been the decrease in the backwardation on lead and the tendency for that on copper to narrow.

The most noteworthy feature of the copper market has been the appearance in the clearing of wirebars. This is a sure sign that the credit squeeze is beginning to have an effect, and it is hoped that the deliveries onto the market represent lack of money rather than lack of orders. Demand on the Continent has been very patchy but that in America has been maintained at a high level, and it can still be said that the world copper price is determined by the quotations of the London Metal

Exchange and the price at which U.S. customs smelters are prepared to sell their metal. A slight recession would not be surprising after the rapid rise which has taken place over recent weeks, but any appreciable fall on the London Metal Exchange is likely to result in the resumption of shipments of metal westward across the Atlantic.

The tin market has been featureless, but with the production/consumption picture being practically in balance any news seriously affecting either the one or the other will cause a violent price movement. On Thursday morning the Eastern price was equivalent to £802 per ton c.i.f. Europe.

The zinc market has had a slightly weaker undertone, due probably to the release of metal which has been frozen up in north-west Europe. Industrial demand is still good, and with signs that the American motor industry is again picking up it would not be surprising to see prices remain at their present level or even go a little higher.

In the lead market the backwardation has diminished, and this may be due to a temporary over-supply of nearby metal which is being sold for financial reasons.

Closing prices and turnovers are given in the following table:—

	March 8		March 15	
	Buyers	Sellers	Buyers	Sellers
Copper				
Cash	£425	£426	£428	£429
Three months	£414	£415	£417½	£418
Settlement		£426		£429
Week's turnover	3,875 tons		5,025 tons	
Tin				
Cash	£825	£830	£822½	£825
Three months	£785	£786	£792½	£795
Settlement		£830		£825
Week's turnover	635 tons		450 tons	
Lead				
Current half month	£122	£122½	£120	£120½
Three months	£118½	£118½	£118½	£118½
Week's turnover	4,650 tons		3,200 tons	
Zinc				
Current half month	£102	£102½	£103	£103½
Three months	£99	£99½	£99½	£99½
Week's turnover	3,325 tons		3,200 tons	

## OTHER LONDON PRICES — MARCH 15

### METALS

Aluminium, 99.5%, £179 per ton	Nickel, 99.5% (home trade) £519 per ton
Antimony—	Osmium, £24/27 oz. nom.
English (99%) delivered, 10 cwt. and over £210 per ton	Osmiridium, nom.
Crude (70%) £200 per ton	Palladium, £8 0s./£8 10s. oz.
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.	Platinum U.K. and Empire Refined £34 0s. oz. Imported £39 0s./£41 0s. oz.
Bismuth (min. 1 ton lots) 16s. lb. nom.	Rhodium, £40/£42.
Cadmium 12s. 0d. lb.	Ruthenium, £16/£18 oz.
Chromium, 6s. 11d. lb.	Quicksilver, £86 10s. ex-warehouse
Cobalt, 21s. lb.	Selenium, 112s. nom. per lb.
Gold, 249s. 4½d.	Silver, 79d. f.o.z. spot and f.d.
Iridium, £29/31 oz.	Tellurium, 15s./16s. lb.
Manganese Metal (96%-98%) £269 according to quantity	
Magnesium, 2s. 4d. lb.	

### ORES, ALLOYS, ETC.

Bismuth .. .. .	65% 8s. 6d. c.i.f.
Chrome Ore—	60% 8s. 3d. lb. c.i.f.
Rhodesian Metallurgical (semi-friable) 48%	£15 2s. 6d. per ton c.i.f.
Refractory 45%	£14 2s. 6d. per ton c.i.f.
Smalls 42%	£12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite, Raw (ground)	£21 0s./£22 0s. d/d
Molybdenite (85% basis)	8s. 2½d. nom. per lb. c.i.f.
Wolfram and Scheelite (65%)	265s. 0d./270s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.)	21s. 4d. nom. per lb. (home)
Ferro-tungsten (80%-85%)	18s. 4d. nom. per lb. (home)
Carbide, 4-cwt. lots	£39 3s. 9d. d/d per ton
Ferro-manganese, home	£59 10s. 0d. per ton
Manganese Ore Indian Europe (46%-48%) basis 125s. freight ..	100d./102d. per unit c.i.f.
Manganese Ore (43%-45%)	95d./97d. per unit c.i.f.
Manganese Ore (38%-40%)	88d./90d. per unit
Brass Wire	3s. 9½d. per lb. basis
Brass Tubes, solid drawn	3s. 2½d. per lb. basis

## THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The credit squeeze has certainly begun to work. Short time working in motor car factories and the reduction in output of television sets and household appliances is an indication of the cut back in consumption. The February trade balance figures also indicate a reduction of imports. Overseas, sterling, which fell sharply following Middle East developments, has recovered. Trading in markets has remained at a low level and prices drifted lower. This was partially offset by a late rally on Wednesday which caught the market off balance.

In the mining section, Kaffirs were idle in anticipation of the Union budget which will be announced as we go to press. Early hopes of a tariff relief, particularly the abolition of the non-resident tax, waned. It is hoped, however, that Mr. Louw may make some concession to marginal properties. The end of dealings for the Stock Exchange financial year which finished on Tuesday caused some erratic movements in London.

Among individual Rand mines, the sharp increase in the native labour supply was taken as an encouraging factor but this was offset by the news that the local unions are asking for higher wages. Dominion Reefs fell back to their lowest level since 1954 but Hartebeestfontein rose on further good investment demand. The steadier trend shown last week by Vogelstruisbult was not maintained, and Cape selling, due to rumours of poor development results, caused a slide in the share price.

The Orange Free State group, followed the downward trend and the dividend announcements by three mines in the Anglo-American group had little effect although President Steyn was slightly harder and President Brand remained steady. The Western Holdings dividend proved disappointing and the shares turned easier. St. Helena surprised the market by a maiden distribution of 6d. a share; this was up to expectations but the payment was not anticipated until June. The Board intends to consider dividend payments in future in March and September. The growth outlook for this mine has received favourable comment in the press.

In the West African market Ariston passed their usual dividend due to losses incurred by the recent strike.

The maintained distribution by De Beers in the face of sharply increased profits indicates that the company is adopting a policy of ploughing back a high proportion of its earnings, probably into non-diamond activities. This disappointed the market, and propaganda from Russia concerning a recent diamond find in the Soviet Union caused a setback.

Copper fluctuated during the week within narrow margins, but the increased dividends announced by Rhokana and Rhodesian Anglo-American failed to hold the price of these shares. On the other hand, the optimistic review by the chairman of Messina concerning the development and outlook for this company caused an improvement in these shares. Favourable press comment on the recent Chartered figures did not bring in many buyers. Esperanza were neglected, due to developments in Cyprus, but the Rio Tinto rights opened at a  $\frac{1}{2}$  premium.

The strike threat by miners in Malaya brought about idle conditions in this section of the market although Nigerian producers were somewhat better and Geevor also benefited from this factor.

In the lead/zinc market, Barriers rose and an outstanding feature were Lake George. A good dividend announcement is looked for. Burmah Mines also went ahead, the operating company in Burma recently produced much better profit figures. A net dividend of 24d, was declared. The Rhodesian Broken Hill figures disclosed a higher profit but the maintained distribution disappointed holders.

Canadian mines benefited from the high level of base metal prices. Wall Street recently rose to a new peak and many equity share prices in the United States are now on a very low yield basis. The excellent figures and report by International Nickel, together with the higher annual distribution, brought about a big jump in these shares and other Canadian base metal mines were also marked up.

Finance	Price Mar. 14	+ or - on week	Rand Gold contd.	Price Mar. 14	+ or - on week	Diamonds and Platinum	Price Mar. 14	+ or - on week	Tin (Nigerian and Miscellaneous) contd.	Price Mar. 14	+ or - on week
African & European . . .	22	-	W. Rand Consolidated . .	38 1/4	-7 1/2 d	Anglo American Inv.	8 1/2	-	Gold & Base Metal . . .	1 7/8	-
Anglo American Corp'n.	8	-	Western Reefs . . .	32 6	-7 1/2 d	Casts . . .	24 10 1/2	-10 1/2 d	Janitor Industries . . .	5 7/8	-
Anglo-French . . .	20	-				Cons. Diam. of S.W.A.	8	-	Jos Tin Area . . .	12 3/8	-
Anglo Transvaal Consol.	28 1/2	-7 3/4	O.F.S. Gold			De Beers Deft. Bearer . .	5 1/2	-	Kaduna Prospectors . .	1 9	-
Central Mining (£1 shrs)	39 6	-3 6	Freddies . . .	7 9	-	De Beers Pfd. Bearer . .	14 1/2	-	Kaduna Syndicate . . .	2 9XND	-
Consolidated Goldfields	58 1/2	-1 1/3	Freddies Consolidated . .	4 6	-1 1/2 d	Pots Platinum . . .	11 3XR	XND -9 1/2	London Tin . . .	8 10 1/4	-1 1/2 d
Consol. Mines Selection	33 1/4	-	F.S. Geduld . . .	3 1/2	-	Waterवाल . . .	18 6XR	XND -1 1/2	United Tin . . .	1 6	-
East Rand Consols.	1 6	-	Geoffries . . .	12 9	-6 d						
General Mining . . .	4 1/2	-	Harmony . . .	25 9	-1 1/2				Silver, Lead, Zinc		
H.E. Prop.	8 1/2	-	Lorraine . . .	6 1/2	-3 d	Copper			Broken Hill South . . .	58 1/2	+1 1/2
Johnnies . . .	38 9	-9 3/4	Lydenburg Estates . . .	17 6	-	Barcroft . . .	38 6	-	Burma Corporation . .	3 3	-4 1/2 d
Rand Mines . . .	3 1/2	-	Merrispruit . . .	10 10 1/2	-1 1/2 d	Chartered . . .	31 1/2	-1 3	Consol. Zinc . . .	48 6	+1 3/8
Rand Selection . . .	40 1/2	-9 3/4	Middle Wits . . .	12 9	-6 d	Esperanza . . .	3 7 1/2	-	Lake George . . .	14 1/2	-1 3/8
Union Corporation . .	38 1/2	-1 6	Ofbits . . .	57 9	-1 9	Messina . . .	10 1/2	+ 1/2 d	Mount Isa . . .	16 10 1/4	-1 1/2 d
Vereeniging Estates . .	4 1/2	-	President Brand . . .	61 3	-	Schanga . . .	15 1/2	-	New Broken Hill . . .	42 6	-
Witts . . .	37 7 1/2	-	President Steyn . . .	33 3	+3 d	Rhod-Anglo-American . .	29 3	-1 3	North Broken Hill . . .	93 1/2	-4
West Wits . . .	39 9	-1 3	S. Helena . . .	27 6	-3 d	Rhodes-Katara . . .	29 3	-1 3	Rhodesian Broken Hill .	12 10 1/4	-4 1/2 d
			Virginia Ord. . .	10 10 1/2	-1 1/2 d	Rhodesian Selection . . .	52 1/2	-9 d	Rhodesian Broken Hill .	12 10 1/4	-4 1/2 d
			Welkom . . .	21 9	-	Rhokana . . .	42 1/2	-	San Francisco Mines . .	24 1 1/2	-1 1/2 d
			Western Holdings . . .	3 1/2	-	Rio Tinto . . .	34 3XR	-	Uruwira . . .	5 7/8	-1 1/2 d
						Roan Antelope . . .	29 1 1/2	-4 1/2 d			
						Selection Trust . . .	4 1/2	-	Miscellaneous		
						Tanks . . .	8 1/2	-	Base Metals and Coal		
						Tharsis Sulphur Br. . .	4 1/2	-	Amal. Collieries of S.A. .	48 1/2	-6 d
									Associated Manganese . .	37 6	-
									Cape Asbestos . . .	8 9	-
									C.P. Manganese . . .	30 9	-
									Consol. Murchison . . .	6 13	+1 3/8
									Natal Navigation . . .	3 1/2	-
									Turner & Newall . . .	98 6	-2 6
									Wankie . . .	16 1 1/2	-7 1/2 d
									Witbank Colliery . . .	5 1/2XND	-



## COMPANY NEWS AND VIEWS

### S.A. Budget Lightens Kaffir Burdens

As was hoped, the South African Budget produced a favourable gesture to the gold mining industry. Mr. Louw's forecast in the Cape Parliament earlier in the year that the Kaffir market would go better thus ranks as one of the more peculiar Budget leaks.

It is understood in London, but not confirmed as we go to press, that the Finance Minister is restoring the formula which governs gold mining taxation to the 1950 level. This may mean that the formula instead of being  $y=63-\frac{378}{x}$  as it has

been for the past five years may become  $y=60-\frac{360}{x}$ . The letter y equals rate of tax payable by the mine, the letter x the ratio of profit to gross revenue expressed as a percentage.

The Minister estimated that this would result in the gold mines paying £700,000 less per annum. This is, of course, a very small amount in relation to total taxation. It represents something like a 4 per cent saving for the average mine. It will thus be of particular importance for those marginal mines which are still liable for a small amount of tax.

Certain concessions for ultra-deep mines were announced, also depreciation allowances on modern items of equipment up to a permitted maximum of £20,000 per annum on each item.

On the subject of the gold price, Mr. Louw tended to be largely parochial. Pointing out that only a 50 per cent increase in the dollar price of gold would add over £90,000,000 to South Africa's annual foreign exchange earnings, the Minister said that a "realistic adjustment" of the price should completely solve the Union's balance of payment problems "apart from its beneficial effects on international liquidity."

He gave a warning that if an increase in the price of gold were delayed until forced by a depression in the economies of the Western World it would then be effected at a heavy cost to all countries concerned.

### Hartebeestfontein a Must for the Portfolio

Last week, our Johannesburg market correspondent gave his views about the general feeling in South Africa on the outlook for gold shares. This week he writes about a particular share—Hartebeestfontein Gold Mining—which he describes as one of the most interesting mines now being developed.

Hartebeestfontein, which started official production in July, 1955, 2½ years after the start of shaft sinking, showed a profit of £48,000 in the first month of operations. In the eighth month of production (February) a profit of £144,000 was made from milling 55,000 tons of ore, averaging 9.35 dwt. per ton. The aggregate profit for the first eight months is £864,000 and it is obvious that the profit for the year's operations will considerably exceed £1,000,000.

The published figures are in themselves impressive as the mine was milling over 50,000 tons a month within three years of the start of shaft sinking. Relatively speaking, the achievement is even greater than these figures show because the 50,000 odd tons have been drawn from stopes of a width of 40 in. or less and approximately 25 per cent waste has been sorted before milling. The effective stope width is, therefore, approximately 30 in. compared with approximately 50 in. in the Free State where no sorting has so far proved practicable. If Hartebeestfontein had stoped at 50 in. with no sorting, the tonnage treated in December and January would have been approximately 90,000, which clearly illustrates the exceptional rate of progress at this mine.

This has resulted in a considerable saving in capital expenditure, and from the short-term point of view the narrow stoping width and substantial sorting is also a bull point because of the smaller capital outlay on the reduction works to recover a given amount of gold—other things being equal. Hartebeestfontein is recovering virtually the same amount of gold from the treatment of approximately 50,000 tons as a Free State mine would recover from approximately 90,000 tons, so that there is a considerable saving in plant capacity. The present plan is to increase the milling rate to 100,000 tons per month, and the uranium plant, with a similar capacity, is due to come into operation at the beginning of 1957. The belief is that uranium is well above average at this mine, and it should be noted that it will be recovered from a reef which is virtually 100 per cent payable on gold content, so that there can be no watering down of the gold grade when uranium production starts.

Even if the capacity of the plant is not extended beyond 100,000 tons per month, the outlook is promising, as a dividend of up to 4s. per share would be possible on the milling of 1,200,000 tons per year, averaging 10 dwt.—it is confidently expected that the gold trade will build up to fully 10 dwt. per ton, and if uranium is rich, the combined uranium gold grade could well be equivalent to 12 dwt. per ton, which would mean a prospective dividend of about 5s. per share.

The mine is expected to pay a maiden dividend in June.

### Oil From Coal in Rhodesia

We learn as we go to press that the activities of Lubimbi Coal Areas Ltd. which has been engaged over the past six years in prospecting in an area some 80 miles south-east of Wankie, are now to be carried a stage further by the financing of a preliminary investigation into the oil-from-coal potentialities of the coal field. Lubimbi, in which Rhodesian Anglo American and Wankie Colliery are jointly interested, are arranging for the Lurgi Company to carry out large-scale gasification and other tests in a semi-commercial pilot plant to determine the suitability of this coal for large-scale petrol production. (It will be recalled that the Lurgi-Ruhrchemie group in Germany played a major part in developing the Fischer Tropsch process.)

In a statement issued yesterday by Rhodesian Anglo American it is emphasized that the whole project is still at the exploratory stage and that it by no means follows it will prove to be an economic proposition. At the same time it is perhaps worth pointing out that the extent of the proved deposits appear to be sufficient to sustain a sizeable oil-from-coal industry.

The present annual consumption of petrol in the Federation is put at about 55,000,000 gal. which approximately equals the planned production of the SASOL oil-from-coal plant in the Union.

### Anglo's O.F.S. Companies Increase Dividends

After declaring their maiden dividends last September, three Anglo American Corporation of South Africa Group O.F.S. gold mining companies have announced further half-yearly distributions. Generally speaking, President Brand's payment of 1s. 6d. as against 1s. last September was well up to expectations. This also applied to the 9d. payment, as against 6d., by President Steyn. Western Holdings, on the other hand, by paying 1s. 6d., only maintained its payment at September's level. This was regarded as disappointing in the market.

An important aspect—and indeed a tribute to the method of financing these rich O.F.S. properties—of the latest announcement was that President Brand's indebtedness to Welkom Gold Mining has now been extinguished. It will be recalled that in the case of both Presidents Brand and Steyn an amount at least equal to the dividends declared had to be made available for loan repayments to Welkom Gold Mining Company. In effect, Brand's provision of £600,000 compared with a dividend which absorbed £975,000. But in the case of Steyn the amount repaid at £487,500 equalled the distribution. A total of £437,500 thus remains to be repaid by Steyn on or before June 30, 1956.

### St. Helena Pays Sixpence

Coming some three months earlier than it was expected, the maiden dividend of 6d. per 10s. share on St. Helena Gold Mines issued ordinary capital of £4,812,500 provided a pleasant surprise. Production at this property started late in 1951 and considerable difficulties initially encountered have since been overcome. Indeed, during the past financial year ended on December 31, 1955, profits after tax were virtually double those of the previous year. This dramatic increase was due to technical achievements amongst which were a decline in costs by about 1s. per ton milled to about 41s.—the lowest of the O.F.S.—and an improvement in grade milled from 4.5 dwt. per ton to 5.3 dwt. per ton. The mill throughput rose considerably.

At present St. Helena is facing a heavy capital expenditure programme. But there are hopes that development work in hand, particularly near the border of the President Brand property, may yield high values. If this eventually proves to be the case, and operations continue at their present level of efficiency, St. Helena 10s. shares at their present price of around 27s. (as compared with a high point of 32s. reached



during 1955), could provide a very good opportunity for capital appreciation in the near future.

### De Beers Maintains 200 Per Cent

With the recommendation of a final dividend of 120 per cent on its issued deferred capital of £4,082,685 in 5s. shares, De Beers Consolidated Mines has maintained its total distribution for the year ended December 31, 1955, at 200 per cent. Net profits earned during the past financial year rose to £10,042,640 from £9,210,344. This figure was struck after providing £1,420,000 for taxation, against £1,800,000 in respect of the previous year.

### Rhokana Pays 75 Per Cent Net

The Rhokana Corporation has announced a gross interim dividend of 24s. per £1 unit on its issued ordinary and "A" capital of £2,450,324 in respect of the year ending June 30, 1956. After Rhodesian taxes a net amount of 15s. per unit (75 per cent) compares with the previous year's interim of 10s. (50 per cent). This was followed by a net final of 42s. 6d. per unit making 52s. 6d. (262½ per cent).

### Rho Anglo's Increased Interim

An increased gross interim dividend in respect of the year ending June 30, 1956, at 3s. 2.4d. per 10s. unit has been announced by Rhodesian Anglo American on its £6,500,000 capital. After Rhodesian taxes, this amount becomes 2s. per unit (or 20 per cent). This compares with an interim of 1s. 6d. for the previous year which was followed by a net final of 6s. 3d. totalling 7s. 9d. (77½ per cent) for the twelve months.

### Rio Tinto Offers 1 for 5 at 50s.

The Rio Tinto Company is to offer stockholders 1,700,000 ordinary 10s. shares at 50s. per share in the proportion of 1 for every 5 held. Recently the company announced its intention of making an issue of shares and a resolution was subsequently passed increasing its authorized capital by £4,000,000 to £12,000,000. The new finance is required principally in connection with Rio Tinto's Canadian and Australian uranium interests, and for the next phase in the group's exploration programme.

The company stated that net profit, after tax, for 1955 is above the previous year's earnings of £648,404. A 15 per cent dividend (tax free) will thus be maintained on the ordinary stock. It is also forecast that the same dividend will be paid in respect of the current year on the increased capital.

### Messina Anticipates Another Record Year

At the meeting of Messina (Transvaal) Development Company, the chairman, Commander H. F. P. Grenfell, expressed his hope that profits during the current year ending September 30, 1956, would reach another record. Since the end of the past financial year, the company, he said, had continued to sell its copper forward "as an insurance against any downward trend which may develop in the fluctuations of the market."

### Nickel's Record Earnings

Group net earnings by The International Nickel Company of Canada during the year ended December 31, 1955, totalled \$91,566,566 as against \$65,295,186 previously. Net earnings per common share rose to \$6.14 from \$4.34 and dividends to \$3.75 from \$2.90 per share.

### Maiden Dividend from Burma Mines

A maiden dividend of 2½d. tax free has been declared by Burma Mines on its issued ordinary capital of £2,369,796 in shares of 3s. 6d. Profits for the year ended June 30, 1955, totalled £198,591 before tax as against £35,380. After allowing for estimated taxation and the dividend, carry forward was £52,866 as against £33,494.

### Ariston Passes Final

Due to the recent strike of African employees on the Gold Coast, Ariston Gold Mines (1929) has been unable to declare a final dividend for the year ended September 30, 1955. It will be recalled that an interim of 10 per cent was paid last May. A

total of 30 per cent was paid in respect of the year 1953/54.

Profits earned during the past financial year fell to £380,452 from £405,432. A lower tax liability, however, raised the net balance to £206,274 from £170,251. Major General W. W. Richards is chairman. Meeting, London, April 10.

### Rho. Broken Hill's Profits Up

Net profit earned by The Rhodesia Broken Hill Development Company during the year ended December 31, 1955, rose to £1,154,140 from £1,024,883. With the recommendation of a final net dividend (after Federal taxes, etc.) amounting to 10d. on its issued ordinary capital of £3,250,000 in 5s. stock units, the previous year's total distribution of 1s. 3d. net has been maintained. Dividend payments absorb £812,500 (same) and an appropriation of £350,000 (£392,768) has been made in respect of capital expenditure.

### Ndola Refineries Doubles Capacity

Annual capacity of the electrolytic copper refinery being built by Ndola Copper Refineries (a subsidiary of Roan Antelope Copper Mines), is to be doubled from its initial figure of 55,000 to 65,000 tons per annum to 110,000 tons by 1960 at a cost of £1,500,000. The company's nominal capital will accordingly be increased to £4,500,000 by creating an additional 1,500,000 shares of £1.

### Minerals Separation Earns More and Pays More

With the declaration of a second interim dividend, amounting to 20 per cent on its issued ordinary capital of £1,000,000 in 5s. stock units, Minerals Separation's total distribution in respect of the year ended December 31, 1955, has been raised to 25 per cent from 20 per cent in respect of the previous year. Provisional results for the group reveal profits up at £437,000 from £413,110. After taxation of £220,000 (£220,320) carry forward totalled £408,550 as against £341,801. A provisional meeting date has been fixed for May 23. Mr. J. N. Buchanan is chairman.

### Jump in Burma Corporation's Profit

Estimated net profits earned by Burma Corporation (1951) during the first six months of its current financial year ending December 31, 1955, rose sharply to £281,272 from £147,525 in respect of the previous corresponding period of 1954. As shown in our last week's issue, page 305, output of marketable products amounted to 8,131 tons of refined lead, 236 tons of refined antimonial lead, 738,154 lb. of silver, 209 tons of copper matte, 124 tons of nickel speiss and 7,743 dry tons of zinc concentrates. A good idea of the progress made by the company may be obtained from a comparison with results for the twelve months ended June 30, 1955, during which estimated net profits came out at £314,798.

### Anglo-French Expansion

Total assets of The Anglo-French Exploration Company as at December 31, 1955, expanded to £1,100,941 from £979,959 in respect of the previous year. Quoted investments shown on the balance sheet at £1,080,703 had a market valuation at December 31 of £1,450,258.

Year to Dec. 31	Total Revenue £	Taxa- tion £	Net Profit £	Divi- dend £	To Reserve £	Carry Forward £
1955	137,277	59,056	45,509	45,281	nil	5,705
1954	104,688	40,245	39,109	38,500	25,000	5,477

In June, 1955, the company's issued ordinary capital was increased from £800,000 to £900,000 by an offer to stockholders of 100,000 shares of £1 at par. The previous dividend of 8½ per cent was, however, maintained.

Anglo-French's investments—of which approximately 97 per cent have quoted prices—include a wide selection of mining shares. Although the exact distribution of funds must await the statement to members by Mr. F. R. Cottell, chairman and managing director, there has recently been a tendency for the company to reduce its gold holdings in favour of oil and copper. Meeting, London, March 28.

### Consolidated Tin Completes Agreement with Burmese Government

Consolidated Tin Mines of Burma has completed an agreement with the Burma Government for a joint venture in which the Burmese Government is to hold 51 per cent of the shares.

**Camp Bird's Record Profit**

Camp Bird, the finance and mining house, have announced a record profit in respect of 1955 of £507,173 received from the sale of investments and from sundry receipts which compares with £105,181 received in the preceding twelve month period. Gross dividends swelled the total a further £209,913 (£87,817) and after adding in a mine profit of £3,231 against £4,443 earnings for the year totalled £720,317 which compares with £197,441 in 1954.

General expenses were nearly double at £31,178 (£15,977) and there was an adjustment in values of certain investments at the end of 1955 to be taken into account totalling £68,310 so that after providing £221,806 (£65,153), the net profit for the year was £399,023 compared with £116,311. Dividends totalling 20 per cent against 10 per cent in 1954 absorbed the net amount of

£124,998 and there was the sum of £72,204 (£50,000) allocated to investment reserve which, at the end of 1955 stood at £200,000—the same figure credited to general reserve.

On November 29, 1955, a wholly-owned subsidiary, Camp Bird Investment Trust was incorporated, and now holds quoted investments valued by the directors at £113,669, and unquoted investments similarly valued at £143,653. Despite the fall in share market value, particularly gold shares, in which Camp Bird is heavily invested, the market value of the quoted assets of the company and its subsidiary, at December 31, 1955, was £1,798,867 against £1,887,687 at the year-end 1954.

Unquoted assets rose during the year from £123,723 to £215,844, this change reflecting the first of the company's investments in industrial undertakings. Since the year-end, the establishment of an industrial group has been virtually completed, and a full statement will be made to shareholders.

**POSITION OPEN — MINING ENGINEER**

Old established Mining Company operating in Honduras, Central America, is seeking the services of an experienced Mining Engineer to take charge of the surveying, mapping and sampling of Base Metal Mine. Single man preferred—Salary open. Send full experience, references, age, marital status and salary expected in first letter. Write to New York and Honduras Rosario Mining Company, 120 Broadway, New York 5, New York, U.S.A.

**WIGAN AND DISTRICT MINING AND TECHNICAL COLLEGE**

Applications are invited for the post of Head of the Mining and Geology Department. Duties will commence on September 1, 1956, or such other date as may be arranged.

Candidates should possess high academic qualifications, preferably an Honours Degree in Mining, practical mining experience, and teaching experience, preferably in a Technical College or University.

Salary in accordance with Burnham scale for Heads of Departments Grade IV (£1,365 - £25 - £1,515). A salary above the minimum of the scale may be paid to a suitably qualified candidate.

Further particulars and application form will be sent by the undersigned. Last date for receipt of applications: Monday, April 9, 1956.

March 12, 1956. E. C. SMITH (Principal).

**MECHANICAL ENGINEERS  
(INSPECTORS OF MACHINERY)  
FEDERATION OF MALAYA (BCD. 99/60/02)**

Required to survey boilers, pressure vessels, prime movers, etc., conduct examinations of engineers and engine-drivers, investigate machinery accidents and enforce safety precautions.

Appointment pensionable, salary range £1,145 - £2,120 including pensionable expatriation allowance, point of entry depending on experience and war service. Non-pensionable expatriation allowance for married candidates from £91 - £259 per annum. Substantial cost of living allowance.

Free passages for officer, wife, and three children under age of 10. Furnished quarters, if available, at reasonable rents. Four days' leave for each month of residential service.

Candidates aged 26-35, must have passed or be exempt from Parts A and B of the examination for A.M.I.Mech.E. Should have served an apprenticeship in Mechanical Engineering, including three years' workshop experience on steam and oil engine manufacture or repair, and have had two years in a position of responsibility. Executive experience of boiler operation, maintenance and/or inspection an advantage.

Apply in writing to the Director of Recruitment (Colonial Office), London, S.W.1, stating briefly age, qualifications and experience, and quoting reference number BCD/99/60/02.

**UNDERGROUND MANAGER** required for small Sandstone Mine in Argyllshire. Salary with bonus £1,000 per annum and free house. Metalliferous mining experience desirable. Write full details and qualifications to Box No. 578, The Mining Journal, 15 Wilson Street, Moorgate, London, E.C.2.

**THE BECKERMET MINING COMPANY LTD.  
CUMBERLAND**

An Assistant Mining Agent is required by the above Company. The successful applicant should possess A.R.S.M. or equivalent qualification or First Class Certificate C.M.A. 1911. The duties include metalliferous mining, limestone, quarrying and fireclay working underground. Age group 35/45. The salary offered is in the region of £1,600 per annum, or upwards according to experience, with excellent prospects for early promotion. Membership of a Staff Pension and Life Assurance scheme is obligatory and an Assisted House Purchase scheme is in operation.

Applications, with details of experience and testimonials, to:—

Managing Director,  
Beckermets Mining Co. Ltd.,  
Moss Bay,  
Workington.

**TECHNICAL ASSISTANTS REQUIRED BY SOUTH  
AFRICAN GOLD MINING GROUP**

Applications are invited for vacancies in the Reduction Plants of Union Corporation Limited Gold Mines as Technical Assistants to be trained for senior administrative appointments. Applicants should possess a Science or Engineering Degree and should be under 35 years of age. Preference will be given to applicants with experience in Reduction Plant practice and to those who possess a Degree in Metallurgical Engineering. Commencing salary will depend upon qualifications and experience.

Good local leave and overseas leave after 5 years' service. Contributory medical benefits and Pension Fund. Passage money advanced and converted to grant on completion of 3 years' service.

United Kingdom applicants should send particulars of their qualifications and experience to Union Corporation Limited, 95 Gresham Street, London, E.C.2. Other applicants should write to the Secretaries, Union Corporation Limited, P.O. Box 1156, Johannesburg.

**AGENCE MINIÈRE ET MARITIME S A  
2, RUE VAN BREE — ANTWERP — BELGIUM**

Sworn weighers, samplers of ores, metals and residues. Agents for shippers at European ports and plants.

Market surveyors and advisers assuring sales direct to consumers  
Telegrams: Rentiers-Antwerp

## CHARTERED BANK OF INDIA, AUSTRALIA & CHINA

### LARGER PROFITS DESPITE INCREASED COSTS

#### MR. V. A. GRANTHAM'S STATEMENT

The one hundred and second ordinary general meeting of The Chartered Bank of India, Australia and China will be held on April 4 at 38 Bishopsgate, London, E.C.

The following are extracts from the statement by the chairman, **Mr. V. A. Grantham**, circulated with the report and accounts for the year 1955:—

#### INTRODUCTORY

The report I have to present will be found to justify the note of restrained optimism upon which I concluded my statement last year. Political relations between the People's Republic of China and the Atlantic countries are less strained but fundamental differences remain unsolved. The volcanic situation in the Formosa Channel continued surprisingly quiescent and towards the end of the year its menaces were obscured to some extent by new crises in the Levant and the Middle East. The tide of Asian nationalism continues to flow strongly and it is inevitable that this should follow emancipation from Colonial rule. No harm can emerge from this provided that as the new Asian regimes become more mature politically they realize that in the modern world no country, however well endowed in material resources, can live in isolation.

Since the end of the war it has been assumed that the achievement of political independence would liberate hitherto submerged reserves of zeal for the public good and impart a new sense of responsibility to labour. To some extent this has happened but the redistribution of power, both political and economic, may be gravely imperilled by the pressure of population. It is useless to attack poverty by political and economic measures if hardly-won improved living standards are submerged by an infinite multiplication of mouths to feed. This is not a problem which can be remitted to the third and fourth generations; in several Eastern countries it already exists.

#### ANSWER TO COMMUNIST PROPAGANDA

It is often said that the answer to Communist propaganda and infiltration in the East is largely to be found in the granting, by the Atlantic countries, of generous economic assistance. Aid must be given, however, in ways which do not affront national pride or damage the national economies, particularly those which are necessarily still based upon agriculture. No constructive purpose can be served by unloading upon Southern and South-Eastern Asia export surpluses of agricultural produce and of consumers' goods that the recipients wish to grow or manufacture themselves. The Eastern lands need technological assistance most of all and of that there would not appear to be a large export surplus in the United Kingdom.

Of the making of five-year plans there seems no end. Some of them are soundly conceived and they should do much to provide productive employment in countries where large reserves of man-power are dissipated in endless divisions of labour. But there is a limit to what the world can consume in relation to its population and the ultimate success of these plans must depend upon a balanced economy where the increase in population, which is bound to take place, is more than matched both by increased production and internal consumption.

#### THE CONSTITUTION OF THE BANK

A year ago I said that the directors felt that in consequence of the closing down of the branches in China which had for many years constituted an important part of the Bank's overseas establishment there must be expansion elsewhere. To facilitate expansion when opportunities offer it is desirable to obtain a revision of those provisions of our Royal Charter which circumscribe our overseas organization. The Court of Directors have accordingly petitioned Her Majesty the Queen for the grant of a consolidating Royal Charter. I am pleased to say that Her Majesty's Treasury have intimated that they approve of the changes proposed. In a letter to the stockholders which accompanies this report I have explained in detail the constitutional and administrative changes proposed by the Court of Directors.

#### THE C.B.I. DEVELOPMENT CORPORATION LTD.

For many years the business transacted by the Bank was related almost wholly to the financing of overseas trade and to the provision of banking facilities and services for a clientele which consisted mainly of merchants.

Between the wars the merchant communities became increasingly associated with the local enterprise throughout the East and the industrialization of hitherto undeveloped countries was accelerated. These tendencies have been accentuated by the up-surge of Asian nationalism since 1945. The Bank has achieved a good deal of success in adapting its operational technique to changed political and economic conditions and during the past ten years an increasing proportion of its resources has been employed in the financing of infant industries and new public works.

Many of the credit operations that the Bank is now being asked to undertake are likely to extend over periods longer than those for which banking accommodation is usually granted. I am sure that the Bank's continuing to operate in the East can be justified only for so long as it is willing to associate itself with the economic development of the territories it serves. Nevertheless, it is not possible, from the ordinary banking point of view, to expand the dispensation of what may be called medium-term credit, that is to say, the granting of accommodation for periods extending from two to ten years, and it has become apparent that a new type of credit institution is required to finance development, both agricultural and industrial, and to sponsor, and perhaps underwrite, the raising of capital from the public.

To meet these requirements within the Bank's sphere of activity the directors have formed the C.B.I. Development Corporation Ltd., which has been registered with an authorized capital of £2,000,000, of which £500,000 has been paid up. The new company is a wholly owned subsidiary of the Chartered Bank of India, Australia and China and I am pleased to say that Sir John Tait, Sir Henry Richardson and Sir Arthur Bruce are associated with me as directors.

I am hopeful that the new institution will be able to play an important part in assisting those countries with whose prosperity the Bank has been so long identified to modernize their economies. Medium-term credit institutions have been formed under the aegis of the Governments of several of the countries of Southern and South-Eastern Asia. It must be presumed that these Government-sponsored institutions will undertake the financing of major industrial enterprises and public works schemes but there are likely to be many projects on a smaller scale which the Bank's Development Corporation could effectively support.

#### COURT OF DIRECTORS

I record with deep sorrow the death on May 26, 1955, of Mr. James Leslie Milne, who was elected to the Court of Directors in 1942 and served as deputy chairman from April 5, 1950, to 1954. Mr. Milne brought to our councils many talents and a wide experience of Eastern trade, industry and finance.

During the dark days of Japanese ascendancy in the East he was a tower of strength to the Court and when the clouds lifted in 1945 his knowledge and resourcefulness were invaluable in helping to plot the course of the Bank through the shoals of political and strategic complications and organizational difficulties which so often appeared. In the place of Mr. Milne the directors have elected to the Court Sir Charles Watt Miles, O.B.E., a partner in Messrs. R. G. Shaw and Company. Sir Charles has long been associated with the plantation industries in the East and we are glad to have the benefit of his knowledge and experience. Mr. Cecil Robbins Cherry, who became a director in 1948, resigned in July last on his retirement from business in the City of London. Mr. Cherry, who spent many years as a merchant in Malaya, was able to contribute much to the deliberations of the Court.

Mr. Cherry has been succeeded by Sir Kenneth Brand Harper, chairman of the Burmah Oil Company Ltd.

There are numerous problems of administration and policy common to the Bank and the international trading organization over which Sir Kenneth presides and his joining the Court of Directors reinforces a much-valued business connection of long standing.

#### THE STAFF

At home and abroad the Bank is served devotedly by the staff of all ranks and it is impossible to speak too highly of the work they do in their various capacities and in their different spheres. Personnel management has become difficult enough in the stable and homogeneous social conditions encountered in the United Kingdom, but although the service of the Bank is more widely diversified than that of many international economic organizations, it is highly gratifying to know that its problems of staff



administration are much less intractable than might be expected in the present political and social ferment throughout the East.

The rapid extension of trades unionism throughout our clerical staffs in the East has revolutionized relationships between the Bank and its Asian employees. The paternalism which was for so long appropriate to the conduct of those relationships has inevitably given way to formal agreements and the setting up of conciliation machinery. Much Oriental trades unionism is inspired by nationalistic fervour which inevitably complicates negotiations related ostensibly to material conditions of service.

A year ago I referred to the decision of the Court to admit Asian officers of the Bank to the covenanted rank of sub-accountant. Nine such promotions have now been made and I am hopeful that the Bank will continue to find, within its service and in the colleges and universities of the East, young Asians qualified for appointment to the rank of sub-accountant.

#### THE BANK'S BALANCE SHEET

The total of the Bank's balance sheet has this year risen to £223,968,987, an increase of £20,283,292 over last year's figure. This is due partly to an increased volume of international trade in those Eastern countries in which the Bank is represented and partly to the higher prices of some of the staple Eastern commodities, notably rubber and tin.

On the left hand, or liabilities, side of the balance sheet, current and other accounts, fixed deposits and bills payable show increases of £12,782,807, £10,175,189, and £485,423 respectively.

Inflation has undoubtedly contributed to these increases. Acceptances on account of customers are down by £3,282,066, which is accounted for by the higher discount rate in London compared to other centres and partly due to the larger holding of sterling by Japanese banks.

On the right hand, or assets, side, cash in hand, at call and at bankers shows the substantial increase of £6,591,069, the ratio to our "demand and time" liabilities, excluding notes in circulation against which security has been lodged being 21.81 per cent, against 18.54 per cent last year.

The figure for Government and other securities apart from those lodged against note issue, is lower by £3,898,420. As usual these have been taken into account at market value and we have made full provision for depreciation out of our internal reserves.

Stockholders will be glad to know that all holdings are dated and in large proportion mature within ten years.

Bills of exchange and advances to customers and other accounts show increases of £2,439,731 and £17,133,312 respectively, once again indicating the extent to which we are assisting our customers and taking our share in financing world trade with Eastern countries.

Considerable expenditure continues to be incurred in meeting the cost of expansion and modernization of our offices in the East. Without suitable premises and accommodation for our staff it is clear that our business cannot operate and we must expect to have to continue to set aside substantial amounts each year in the writing down of this item.

#### PROFIT AND LOSS ACCOUNT

The net profits for the year at £759,340 are higher by £36,193 than last year, in spite of increasing working costs in all countries where we operate.

Fortunately these increased costs have been more than covered by increased business.

The scale on which world trade has increased during the last two years is due partly to the intense effort being made by each country to become self-supporting and partly to inflation. On either count it is vulnerable and liable to set-backs and I would ask stockholders not to lose sight of that fact.

The Bank paid an interim dividend in September last of 7½ per cent, less income-tax, absorbing £150,938 and it is proposed that out of the balance now available a final dividend of 7½ per cent should be paid, costing £150,937, making the total distribution for 1955.15 per cent. It is proposed to repeat the allocations made in each of the past five years to the pension fund and widows' and orphans' fund of £125,000 and £20,000 respectively. The sum of £200,000 has again been applied towards writing down Bank premises and furniture account.

It is proposed to transfer £100,000 to contingencies account and to carry forward the increased balance of £405,375.

#### CONCLUSION

The money markets of the sterling area are of necessity highly sensitive to policy pursued in the City of London and we have therefore to pay close attention to the policy of credit restriction now in operation in this country.

While it is obviously proper for us to observe the official

directive so far as it applies to customers who deal and trade exclusively in this country, it will be clear that our operations overseas must, in the end, be related to the policies and needs of those countries in which we operate, where we have obvious responsibilities to the Governments concerned, some of which are outside the sterling area.

The rates of interest imposed in the United Kingdom must to some degree affect the cost of finance of new projects in the undeveloped countries, but the extent to which finance for those projects should be provided is properly a matter for the countries themselves to determine and our main concern must be to see that our own operations are carried out on sound lines in each country in relation to local conditions.

The sterling area has far-flung ramifications and it is only too clear that uncertainties as the results of the credit squeeze in this country could have far reaching results not only in this country but also in the many countries in which we operate.

It must be hoped that the policy that is now being put into effect will counteract those uncertainties without undue delay.

Copies of the full text of the statement will be sent on application to the Secretary of the Bank, at 38 Bishopsgate, London, E.C.2.

### OURS ALONE ?

YES, FACE IT:

### FOR 5 MINUTES !

We must fight the Fire Fiend ALONE before the Fire Brigade gets here. Please send details of NU-SWIFT rapid and reliable Fire Extinguishers—BEFORE IT IS TOO LATE !

Name .....

Address .....

Post NOW to Nu-Swift Ltd. 29 Piccadilly W.1.

In Every Ship of the Royal Navy

## WOLVERHAMPTON DIAMOND DIE & TOOL Co. Ltd.

# BOARDS and INDUSTRIAL DIAMONDS Exporters

11 HATTON GARDEN,  
LONDON, E.C.1

Telephone: HOLborn 3017 Cables: Pardimon, London



## Flame test shows that Conveyor Belting made with GEON PVC is safer!

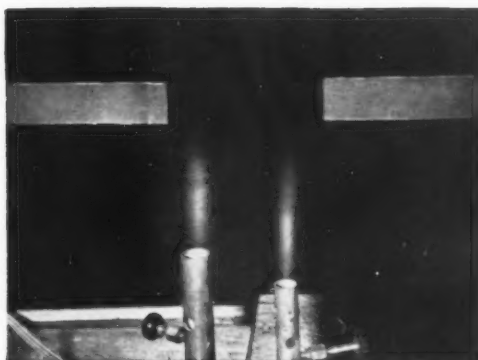
This flame test—a modification of that specified in B.S. 738—clearly demonstrates the safety and flame resistance of conveyor belting made with Geon PVC. Two pieces of belting—one rubber, one made with Geon PVC—were used in this test. Both were subjected to a bunsen flame (ca. 1800 C.) for three minutes. After the bunsens were removed the rubber belting was still in flames and partially destroyed, but the belting made with Geon PVC had neither caught fire nor continued to flame. This test underlines the reason why Geon PVC is making an outstanding contribution to safety in the mines.

*Geon PVC materials are polyvinyl chloride plastics.  
Write for descriptive booklet No. 112 free on request.*



# BRITISH GEON LIMITED

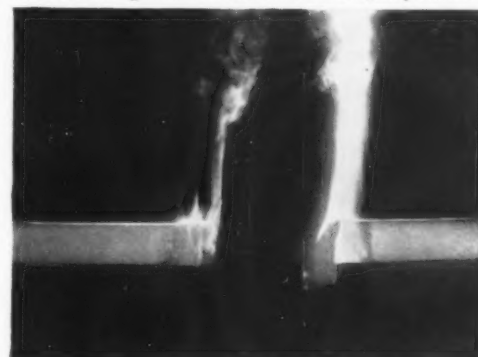
Sales & Technical Service: DEVONSHIRE HOUSE · PICCADILLY · LONDON W1 TELEPHONE: MAYFAIR 8867



*Stage 1* Before the start of the test, Geon PVC belting on the left, rubber belting on the right.



*Stage 2* Both bunsens moved into position simultaneously. Rubber belting in flames. Geon PVC belting only charred.



*Stage 3* Bunsens removed. Rubber belting continues to burn fiercely; partially destroyed. PVC belting, though smoking, is seen to be hardly affected.

# act today to beat Fire tomorrow

It costs you nothing to consult Pyrene Fire Engineers about fire protection, above or below ground—yet it may result in the saving of thousands of pounds' worth of plant and equipment; it may mean the saving of lives.

The wide experience of The Pyrene Company in developing fire fighting equipment to combat the fire risks in the mining industry—including fire detecting and alarm systems, and all forms of fire fighting appliances employing Special Liquids, Chemical Foam, Mechanical Foam, Carbon Dioxide, or CO<sub>2</sub>-Dry Chemical—is always at your disposal.

If you wish to receive illustrated literature, or would like our technical representative to call, without obligation, write now to Dept. M.J.3.



BY APPOINTMENT TO H.M. THE QUEEN  
SUPPLIERS OF FIRE EXTINGUISHERS



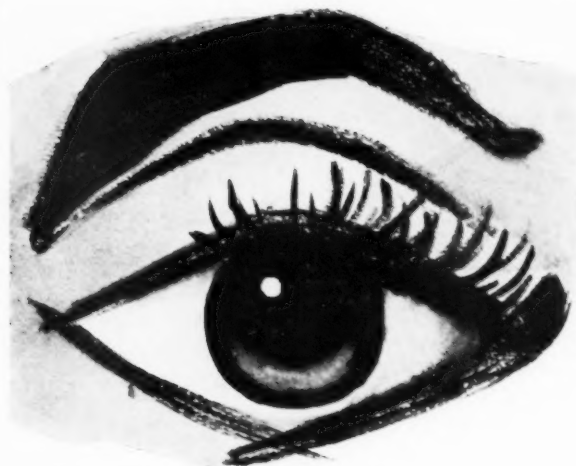
*An investment in peace of mind*

**THE PYRENE COMPANY LIMITED**

9 GROSVENOR GARDENS, LONDON, S.W.1.

Telephone: VICTORIA 3401

Head Office & Works: BRENTFORD, MIDDLESEX Canadian Plant: TORONTO



**When  
it's a  
question  
of Safety  
the eyes  
have it**

Complete protection for the eyes, when welding or grinding, is afforded by these 'Pulsafe' goggles. The Chance 'Protex', Protal, Crookes, Calorex or Blue lenses are proofed against pitting with plastic cover lenses, both inside and out. 'Triplex' safety lenses are used for the grinding version. The eye-cups are of Nylon and unaffected by sterilisation. Of the greatest importance is the absolute comfort for the wearer with eye-cups made to conform to the face contours and only the broad rolled edges contacting the skin. Other features are adjustable nosebridge and all metal parts anodised against corrosion. Weight of complete goggles is 3 ozs.



**PULSAFE  
NYLON  
CONTOUR  
MOULD  
GOOGLES**

*We will gladly send you a specimen of this product for your examination.*

**SAFETY PRODUCTS  
LIMITED**

ST. GEORGES HOUSE • 44 HATTON GARDEN • LONDON EC1

Telephone: CHAncery 9141

# **RAPIER** EXCAVATORS

There is a full range of RapieR Excavators from  $\frac{1}{4}$  cu. yd. upwards, suitable for all duties from earth moving to heavy quarrying.

Interchangeable front end equipments are available enabling shovels to operate as draglines, dragshovels, skimmers, piledrivers or cranes.



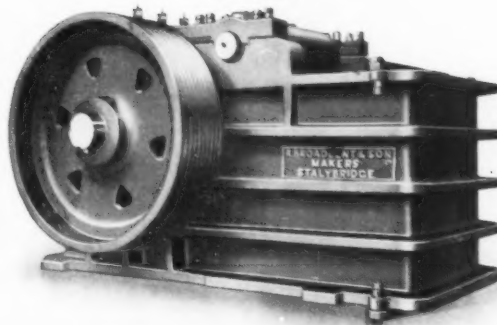
RapieR 424 -  $\frac{3}{4}$  cu. yd. Shovel

**RANSOMES & RAPIER LTD., IPSWICH, ENGLAND**

## **THE BROADBENT PRIMARY CRUSHER**

42" x 36"

MAKERS OF  
SCREENING  
ELEVATING  
AND  
LOADING PLANTS  
CHIPPING  
BREAKERS



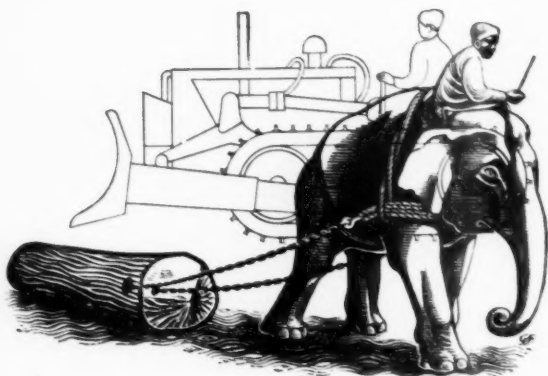
MAKERS OF  
PATENT IMPROVED  
BLAKE  
STONEBREAKERS  
GRANULATORS  
CRUSHING ROLLS

*The firm with over 100 years experience*  
ESTABLISHED 1837

**ROBERT BROADBENT & SON LTD.**  
**PHOENIX IRON WORKS**  
**STALYBRIDGE**

Telegraphic Address :  
**BROADBENT, STALYBRIDGE**

Telephone :  
**STALYBRIDGE 2201**



It is impossible to judge from statistics alone how far India's *traditional industries* are being reshaped by Western machines and methods. A first hand experience of Indian life and commerce, like that of the National Bank of India, is needed to put facts into perspective. Enquiries about trade here, or with any other country which is served by the Bank, are welcomed at the Head Office or at any branch.

**NATIONAL BANK OF INDIA LTD.** Head Office: 26, BISHOPSGATE, LONDON, E.C.2

West End (London) Branch: 13, ST. JAMES'S SQUARE, S.W.1

Branches in: INDIA, PAKISTAN, CEYLON, BURMA, KENYA, TANGANYIKA, ZANZIBAR, UGANDA, ADEN AND SOMALILAND PROTECTORATE

Bankers to the Government in: ADEN, KENYA COLONY, UGANDA AND ZANZIBAR



*Leakproof. safe. reliable*

For temporary pipe lines 'Unicone' instantaneous joints are recommended. Comprising two parts only, they fasten with a "snap" ensuring a perfect seal in a matter of seconds.

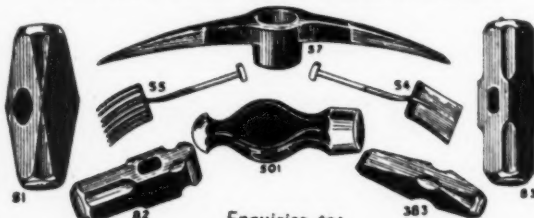
For permanent or semi-permanent pipe lines 'Unicone' bolted type joints are usually employed and can be assembled far more quickly than any flexible joint giving positive anchorage.



THE UNICONE CO. LTD., RUTHERGLEN, GLASGOW, SCOTLAND



**BRINDLEY'S**  
**WORLD FAMOUS STEEL BALLS**  
**CARBON & BEST ALLOY STEEL**  
DRILL STEELS  
QUARRY AND HAND MINING TOOLS



Enquiries to:  
**F. J. BRINDLEY & SONS (Sheffield) LTD**  
CENTRAL HAMMER WORKS,  
SHEFFIELD ENGLAND  
Phone and Grams: Sheffield 24201/2



# Metal and Mineral Trades

## A. STRAUSS & CO. LTD.

FOUNDED 1875

PLANTATION HOUSE, MINCING LANE, LONDON, E.C.3

### METALS

Telephone: Mincing Lane 5551 (10 lines)  
Telegrams: Straussar Phone London

Telex GB LN 8058

### RUBBER

Telephone: Mansion House 9082 (3 lines)  
Telegrams: Ascorub Phone London

**MERCHANTS**

**EXPORTERS**

**IMPORTERS**

Non-Ferrous Metals — Virgin, Alloys, Scrap

RUBBER

COPPER REFINERS

Members of the London Metal Exchange

Dealer Members of the Rubber Trade Association

Members of the National Association of Non-Ferrous Scrap Metal Merchants

## CONSOLIDATED TIN SMELTERS, LIMITED.

ST. SWITHIN'S HOUSE, 11/12 ST. SWITHIN'S LANE, LONDON, E.C.4

Telephone: Mansion House 2164/8

Telegrams: CONSMELTER, PHONE, LONDON

PROPRIETORS OF THE FOLLOWING BRANDS OF LAMB & FLAG AND STRAITS TIN

**ENGLISH**  
INGOTS & BARS

**MELLANEAR** (99-99% Guaranteed)  
**CORNISH**  
**MELLANEAR** Common  
**PENPOL** and Refined

**STRAITS** INGOTS—E. S. Coy., Ltd., Penang  
BARS—Penang Palm

BUYERS OF ALL CLASSES OF TIN ORES

Sole Selling Agents: VIVIAN, YOUNGER & BOND, LIMITED

PRINCES HOUSE, 95 GRESHAM STREET, LONDON, E.C.2

Telephone: MONARCH 7221/7  
Telex: LONDON 8665

Telegrams: BOND, STOCK, LONDON  
Cables: BOND, LONDON

Telegrams:  
"BASSETT, PHONE, LONDON."

Telephone:  
MANSION HOUSE 4401/3.

## BASSETT SMITH & Co. Ltd.

(Incorporating George Smith & Son)

15/18 LIME ST., LONDON, E.C.3

**METALS,**

**ORES** (Copper, Zinc, Lead, &c., Complex),  
**RESIDUES, SKIMMINGS & ASHES**  
**NON-FERROUS SCRAP**

ESTABLISHED 1869

**BLACKWELL'S**  
**METALLURGICAL WORKS LTD.**  
THERMETAL HOUSE, GARSTON, LIVERPOOL, 19

**MAKERS OF**  
**FERRO ALLOYS, NON-FERROUS ALLOYS**  
**RARE METALS**

**BUYERS AND CONSUMERS OF**  
**COLUMBITE, TANTALITE, TUNGSTEN**  
**MANGANESE and all ORES**

Works, Garston.

Telegrams: Blackwell, Liverpool

Cable Address: WAHCHANG, NEW YORK

## WAH CHANG CORPORATION

(FORMERLY WAH CHANG TRADING CORPORATION)

233 BROADWAY

NEW YORK 7, NEW YORK

## TUNGSTEN TIN

### BUYERS

Tungsten Concentrates, Tungsten Tin Concentrates  
Mixed Tungsten Ores  
Tungsten Tailings, Scrap, Tips, Grindings  
Tin Concentrates—Tin Dross, Tin Furnace Bottoms

### SELLERS

Tungsten Concentrates to Buyers' Specifications  
Tungsten Salts, Tungsten Powder  
Tungsten Rods and Wires  
Tungsten Ingots, Tin Oxides, Tin Chlorides

PLANT—GLEN COVE, NEW YORK

## THE STRAITS TRADING COMPANY, LIMITED

Head Office :  
P.O. Box 700, OCEAN BUILDING, SINGAPORE

Works:  
SINGAPORE & PENANG

"The Straits Trading Co. Ltd."  
Brand of Straits Tin

## THE BRITISH TIN SMELTING COMPANY LIMITED

Works : LITHERLAND, LIVERPOOL

*Smelters of Non-ferrous Residues and Scrap*

London Agents :

**W. E. MOULSDALE & CO., LTD.**  
2 Chantry House, Eccleston Street, London, S.W.1  
Cables : Wemoulanco London Telephone : SLOane 7288/9

## FRANK & SCHULTE

Handelsgesellschaft m.b.H.

(Incorporating Frank & Dieckmann G.m.b.H.)

ALFREDSTRASSE 152 POSTBOX 515  
ESSEN, GERMANY

Telegrams: Silizium Teleprinter No. 0857835 Telephone: 75921

**ORES MINERALS FERRO-ALLOYS**  
**METAL-ALLOYS METALS**  
**CHEMICALS REFRACTORIES**

Established 1922

OFFERS AND AGENCIES SOLICITED

Telephone : AMHERST 2211 (six lines)

## E. AUSTIN & SONS

(London) LIMITED

**ATLAS WHARF**  
**Hackney Wick, London, E.9**

*Are Buyers of all scrap*

**NON-FERROUS METALS,**  
**GUNMETAL, ALUMINIUM,**  
**COPPER, BRASS, LEAD, Etc.**

*Manufacturers of*

**INGOT BRASS, GUNMETAL**  
**& COPPER ALLOYS, INGOT**  
**LEAD, TYPE METAL, ZINC,**  
**Etc.**



**WORLD-WIDE  
SERVICE**

**DANIEL C.  
GRIFFITH  
& CO.**  
**ASSAYERS**  
TO THE BANK OF ENGLAND  
**27/33, PAUL STREET,  
LONDON, E.C.2.**

Branch Office: LEFKA, Cyprus

Also at:  
BRISTOL  
BIRMINGHAM  
GLASGOW  
HULL  
LIVERPOOL  
NEWCASTLE  
S. WALES

Analytical Chemists, Samplers,  
Technical representatives in  
sales of Ores & Metals at all  
Ports and Works.

Also in:  
BELGIUM  
CANADA  
FRANCE  
GERMANY  
HOLLAND  
ITALY  
PORTUGAL  
SPAIN  
SWEDEN  
SWITZERLAND  
U.S.A.

Analyses of  
**PRECIOUS METALS**  
**BASE METALS**  
**ORES & RESIDUES**  
Etc.

Telephone :  
**MONARCH 1314 (3 lines)**

Telegraphic Address:  
**"GRYFFYDD, LONDON."**

Telephone: MON. 5941-3 Cables: AYRTONMET Telex: LONDON 2-2475

## AYRTON METALS LIMITED

(Members of the London Metal Exchange)

IMPERIAL HOUSE, DOMINION STREET, LONDON, E.C.2

IMPORTERS AND EXPORTERS OF

**NON-FERROUS VIRGIN METALS, SCRAP,**  
**ALLOYS, ORES, MINERALS AND BY-PRODUCTS**  
containing

**BASE AND PRECIOUS METALS**

**DEALERS IN PLATINUM GROUP METALS**

ADVANCES MADE AGAINST CONSIGNMENTS

U.S. Agents  
The Ayrton Metal & Ore Cpn., 30 Rockefeller Plaza, New York 20, N.Y.

Telegrams : Nonfermet London Telex, London Cables : Nonfermet London Telephone : Mansion House 4521 International Telex : London 8547

## HENRY GARDNER & CO. LTD.

**Non-Ferrous Metals**  
**and Semi-Manufactures,**  
**Ores, Minerals and Residues,**  
**Rubber**  
**Iron and Steel**  
**and General Merchandise**

**2 METAL EXCHANGE BUILDINGS,**  
**LONDON, E.C.3**

and at BIRMINGHAM, MANCHESTER, and GLASGOW

LEAD

ZINC

## THE ANGLO CHEMICAL & ORE CO. LTD.

(Members of the London Metal Exchange)

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

Cables:  
"CHEMORE"

Telephone:  
LONDON WALL 7255  
(8 lines)

Telex:  
LONDON 8043

COPPER

TIN

### GEORGE T. HOLLOWAY & CO. LTD.

METALLURGISTS & ASSAYERS,  
ORE TESTING, WORKS AND  
METALLURGICAL RESEARCH LABORATORIES  
Atlas Road, Victoria Road, Acton,  
LONDON, N.W.10

Telephone No.:  
ELGAR 5202

Tels. & Cables:  
NEOLITHIC LONDON

### EVERITT & Co. Ltd.

40 CHAPEL STREET  
LIVERPOOL  
Phone: 2995 Central

Teleg. Address: Persistent, Liverpool

SPECIALITY:

#### MANGANESE PEROXIDE ORES

We are buyers of:  
WOLFRAM, SCHEELITE, VANADIUM,  
MOLYBDENITE, ILMENITE, RUTILE,  
ZIRCONIUM and TANTALITE ORES

Suppliers of:  
FERRO-ALLOYS & METALS, NON-FERROUS ALLOYS

### P. & W. MACLELLAN LTD.

129 TRONGATE, GLASGOW  
NON-FERROUS METALS all classes  
INGOT SCRAP MANUFACTURED

Letters: P.O. Box 95 Glasgow  
Telegrams: Maclellan, Glasgow Telephone: Bell 3403 (20 lines)

### RHONDDA METAL CO. LTD.

1 HAY HILL, BERKELEY SQ., LONDON, W.1.  
Works: PORTH, GLAM.

PHOSPHOR COPPER,  
PHOSPHOR BRONZE, LEAD BRONZE,  
GUNMETAL, BRASS

Telephone: MAYFAIR 4654

Cables: RONDAMET

EXPORT

### K. WASSERMANN LTD.

IMPORT

127, KINGS CROSS ROAD, LONDON, W.C.1

FERRO-ALLOYS  
NON-FERROUS METALS : CHEMICALS

Cables: Metafe, London

Telephone: TERMINUS 8282-3-4

### BARNET NON-FERROUS METAL CO.

Elektron House, Brookhill Road, New Barnet, Herts.  
Phone: Barnet 5187 and 3901

STOCKISTS OF: Aluminium, Brass and Copper  
BUYERS OF: all non-ferrous scrap

The RIGHT firm to deal with

### J. LOWENSTEIN & CO. LTD.

GREENWICH HOUSE,  
10/13 NEWGATE STREET, LONDON, E.C.1  
Telephone: City 8401 (7 lines)

ORES - METALS - RESIDUES

### ROURA & FORGAS, LTD.

Telephone No:  
GERRARD 9641

Sole Sterling Area Suppliers of

## ITALIAN QUICKSILVER

PRODUCED BY MONTE AMIATA, S.M.P.A.

COLQUHOUN HOUSE,  
27/37 BROADWICK STREET, LONDON, W.1

MINING &  
CHEMICAL  
PRODUCTS  
LIMITED

86 Strand  
London WC2  
Telephone  
Temple Bar  
6511/3

Buyers of Ores,  
Concentrates  
and Residues of

BISMUTH  
INDIUM  
SELENIUM

METAL  
SUPPLIES

Ltd

Suppliers of

COPPER  
REFRIGERATOR  
TUBING

and all other  
NON FERROUS TUBING

72 VICTORIA ST. LONDON S.W.1

Phone: VICTORIA 1735 (3 lines).

Grams: METASUPS, WESPHONE

# WANTED TO BUY

## Complex Ores & Concentrates AND Mill & Smelter By-Products

CONTAINING

NICKEL	COPPER
COBALT	ZINC
TUNGSTEN	LEAD
MOLYBDENUM	BISMUTH
SELENIUM	OTHER METALS
FLUE DUSTS	

## Fred H. Lenway & Company, Inc.

112 MARKET STREET - - - SAN FRANCISCO 11, CALIFORNIA  
CABLES: LENWAY

### ECONOMICS OF SOUTH AFRICAN GOLD MINING

by

R. E. WALLACE and A. S. ROBERTSON

With illustrations by JOHN L. TURNER

**THIS** book (now available for the first time at a "popular" price) has been specially written for the non-technical mining investor by two Johannesburg accountants in collaboration with a geologist and a mining engineer. It explains how to make full use of the wealth of geological, mining and statistical data, published monthly and quarterly, by the South African groups.

Such information, which is almost invariably reported and commented on in the financial and mining press, often presupposes a degree of knowledge not only of geology and of the techniques of prospecting and mining but also of the limits of economic mining and of the mathematics of share valuation, which many investors do not possess. It is this knowledge which *Economics of South African Gold Mining* supplies.

This book tips no shares, nor does it set out to evaluate the prospects for any particular mine. Its sole purpose is to present the essential background knowledge without which a considered view of this or that South African gold mining share is not possible. It does so in terms which the lay investor can understand, yet in sufficient detail to enable him to put the principles involved to practical use.

**PRICE 12s. 6d.**

### COSMO METAL ALLOYS CORPORATION

ESTABLISHED 1895

•

## ORES - MINERALS METALS - SCRAP

**Special Alloys and Residues containing Nickel  
Cobalt - Tungsten - Molybdenum - Vanadium  
Cadmium - Bismuth - Selenium - Precious  
Metals**

**FERRO ALLOYS**

U.S. EXCLUSIVE REPRESENTATIVE OF FOREIGN MINING COMPANIES

**PROCESSORS OF RADIO NICKEL SCRAP AND  
ALL GRADES OF NICKEL ALLOY SCRAP  
AND RESIDUES**

•

Office: 150 Broadway, New York 38, N.Y.  
Plant: 597-603 Kent Avenue, Brooklyn, 11, N.Y.  
Cable Address: 'EDELORIOUS'



# MACHINERY & EQUIPMENT DIRECTORY

Buyers will find the addresses of the companies listed below in the advertisement pages of our recent issues. Alternatively, enquiries may be addressed to *The Mining Journal*, 15 Wilson Street, London, E.C.2. Phone: MONarch 2567.

- AGITATORS**  
Denver Equipment Co. Ltd.
- AIR-HOSE COUPLERS**  
Victor Products (Wallsend) Ltd.
- BALL MILLS**  
Fraser & Chalmers Eng'g Wks.
- BALL MILL LINERS**  
Hadfields Ltd.
- BALLS FOR MILLS**  
Brindley (F. J.) & Sons (Sheffield) Ltd.
- BATTERIES**  
Britannia Batteries Ltd.
- BEARINGS**  
British Timken Ltd.
- BELTING — RUBBER & FIRE RESISTANT**  
British Belting & Asbestos Ltd.  
British Tyre & Rubber Co. Ltd.  
Turner Bros. Asbestos Co. Ltd.  
U.S. Rubber International (G.B.) Ltd.
- ROOTS — MINER'S SAFETY**  
Wilkins & Denton Ltd.
- BOREHOLE & DRILLING CONTRACTORS**  
Conrad Stork Hirsch, N.V.  
Craelius Co. Ltd.  
Thom (John) Ltd.
- BRAKE & CLUTCH LININGS**  
British Belting & Asbestos Ltd.  
Small & Parkes Ltd.  
Turner Bros. Asbestos Co. Ltd.
- CABLES**  
British Insulated Callender's Cables Ltd.  
Edison Swan Electric Co. Ltd.
- CABLEWAYS & ROPEWAYS**  
Ceretti & Tanfani Ropeway Co. Ltd.
- CALCINING PLANT**  
Fraser & Chalmers Eng'g Wks.
- CASTINGS**  
Hadfields Ltd.
- CEMENTATION**  
Cementation Co. Ltd.
- CHEMICALS**  
I.C.I. (Gen. Chem. Div.)
- CLASSIFIERS**  
Denver Equipment Co. Ltd.  
Holman Bros. Ltd.
- CLUTCHES — FRICTION**  
British Belting & Asbestos Ltd.  
Small & Parkes Ltd.  
Turner Bros. Asbestos Co. Ltd.  
Wigglesworth (F.) & Co. Ltd.
- COAL BREAKERS**  
Hadfields Ltd.
- COAL CUTTERS**  
Joy-Sullivan Ltd.
- COAL WASHING PLANT**  
Fraser & Chalmers Eng'g Wks.
- COMPRESSORS — AIR**  
Atlas Diesel Co. Ltd.  
Holman Bros. Ltd.  
Lead Wool Co. Ltd.  
Ward (Thos. W.) Ltd.
- CONCENTRATING TABLES**  
Davies Magnet Works Ltd.  
Fraser & Chalmers Eng'g Wks.  
Holman Bros. Ltd.  
Knapp & Bates Ltd.
- CONCRETE MIXERS**  
Ransomes & Rapier Ltd.
- CONVEYORS**  
Broadbent (Robt.) & Son Ltd.  
Cable Belt Ltd.  
Fraser & Chalmers Eng'g Wks.  
Mitchell Engineering Ltd.  
Moxey Conveyor & Transporter Co. Ltd.  
Wood (Hugh) & Co. Ltd.
- CRANES**  
Ward (Thos. W.) Ltd.
- CRAWLER TRACTORS**  
Mackay Industrial Equipment Ltd.  
Marshall Sons & Co. Ltd.
- CRUSHERS — JAW**  
Broadbent (Robt.) & Son Ltd.  
Fraser & Chalmers Eng'g Wks.  
Hadfields Ltd.  
Nordberg M.T.G. Co. Ltd.  
Sheepbridge Eng'g Ltd.
- CRUSHERS — GYRATORY**  
Hadfields Ltd.  
Nordberg M.T.G. Co. Ltd.  
Sheepbridge Eng'g Ltd.
- CYANIDE PLANTS**  
Denver Equipment Co. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Knapp & Bates Ltd.
- DIAMONDS — INDUSTRIAL**  
Smit (J. K.) & Sons Ltd.  
Van Moppes (L. M.) & Sons Ltd.  
Wolverhampton Diamond Die & Tool Co. Ltd.
- DREDGE BUCKETS**  
Hadfields Ltd.
- DREDGE BUCKETS**  
Hadfields Ltd.
- DREDGES**  
Ruston Bucyrus Ltd.
- DRILL BITS — DETACHABLE**  
Holman Bros. Ltd.  
Rip Bits Ltd.  
Victor Products (Wallsend) Ltd.
- DRILL BITS — DIAMOND**  
Craelius Co. Ltd.  
Smit (J. K.) & Sons Ltd.  
Van Moppes (L. M.) & Sons Ltd.
- DRILL RIGS**  
Conrad Stork Hirsch, N.V.  
Joy-Sullivan Ltd.  
Ruston Bucyrus Ltd.  
Mitchell Engineering Ltd.
- DRILL RODS**  
Holman Bros. Ltd.  
Rip Bits Ltd.  
Victor Products (Wallsend) Ltd.  
Wood (Hugh) & Co. Ltd.
- DRILL SHARPENERS**  
Holman Bros. Ltd.
- DRILL STEEL**  
Brinbley (F. J.) & Sons (Sheffield) Ltd.  
Hadfields Ltd.  
Victor Products (Wallsend) Ltd.
- DRILLS — DIAMOND & CORE**  
Craelius Co. Ltd.  
Joy-Sullivan Ltd.  
Smit (J. K.) & Sons Ltd.
- DRILLS — PROSPECTING**  
Conrad Stork Hirsch, N.V.  
Mitchell Engineering Ltd.  
Ruston Bucyrus Ltd.
- DRILLS — ROCK**  
Atlas Diesel Co. Ltd.  
Holman Bros. Ltd.  
Victor Products (Wallsend) Ltd.  
Wood (Hugh) & Co. Ltd.
- EARTH MOVING EQUIPMENT**  
Birtley Co. Ltd.  
Blackwood Hodge (J.) & Co. Ltd.  
Mackay Industrial Equipment Ltd.  
Marshall Sons & Co. Ltd.  
Premier Plant & Hire Co. Ltd.  
Ward (Thos. W.) Ltd.
- ELECTRIC MOTOR & CONTROL GEAR**  
British Thomson-Houston Co. Ltd.  
General Electric Co. Ltd.  
Igranite Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.
- ELECTRICAL SWITCHGEAR**  
British Thomson-Houston Co. Ltd.  
General Electric Co. Ltd.  
Igranite Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.  
Wood (Hugh) & Co. Ltd.
- ELECTRICAL PRECIPITATION**  
Lodge Cottrell Ltd.
- EXCAVATORS**  
Blackwood Hodge (J.) & Co. Ltd.  
Premier Plant & Hire Co. Ltd.  
Ransomes & Rapier Ltd.  
Ruston Bucyrus Ltd.
- EXPLOSIVES — BLASTING**  
I.C.I. (Nobel Division)
- FILTERS**  
Denver Equipment Co. Ltd.
- FILTERS — LUBRICATING OILS**  
Stream-Line Filters Ltd.  
Tecalmit Ltd.
- FILTERS — SWITCH & TRANSFORMER OIL**  
Stream-Line Filters Ltd.
- FIRE EXTINGUISHERS**  
Nu-Swift Ltd.  
Pyrene Co. Ltd.
- FIRST AID EQUIPMENT**  
Cuxon Gerrard & Co. Ltd.
- FLEXIBLE JOINTS**  
The Unicorn Co. Ltd.
- FLOTATION EQUIPMENT**  
Denver Equipment Co. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Huntington, Heberlein & Co. Ltd.  
Knapp & Bates Ltd.
- FLOTATION REAGENTS**  
I.C.I. (Gen. Chem. Div.)  
National Chemical Products Ltd.
- FOUNDATIONS**  
Cementation Co. Ltd.
- FURNACES**  
Huntington-Heberlein & Co. Ltd.
- GEOPHYSICAL INSTRUMENTS**  
Hilger & Watts Ltd.
- GEOPHYSICAL & GEOLOGICAL SURVEYS**  
Craelius Co. Ltd.  
Thom (John) Ltd.
- GRINDING PANS**  
Fraser & Chalmers Eng'g Wks.  
Holman Bros. Ltd.
- HANDLING PLANT**  
Mitchell Engineering Ltd.  
Moxey Conveyor & Transporter Co. Ltd.
- HAULAGE GEAR**  
Austin Hopkinson & Co. Ltd.  
Holman Bros. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.  
Robey & Co. Ltd.
- HELMETS**  
Helmets Ltd.  
Safety Products Ltd.  
Siebe Gorman & Co. Ltd.
- HOISTS**  
Austin Hopkinson & Co. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Holman Bros. Ltd.
- HOSE — RUBBER**  
British Tyre & Rubber Co. Ltd.  
U.S. Rubber International (G.B.) Ltd.
- LIGHTING EQUIPMENT**  
Edison Swan Electric Co. Ltd.  
General Electric Co. Ltd.  
Igranite Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.  
Victor Products (Wallsend) Ltd.
- LOCOMOTIVES — DIESEL**  
Hunslet Engine Co. Ltd.  
Ruston & Hornsby Ltd.  
Wood (Hugh) & Co. Ltd.
- LOCOMOTIVES — ELECTRIC**  
British Thomson-Houston Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.
- LOCOMOTIVES — STEAM**  
Hunslet Engine Co. Ltd.
- LUBRICATION — MECHANICAL**  
Tecalmit Ltd.
- MAGNETIC SEPARATORS**  
Davies Magnetic Works Ltd.  
Huntington, Heberlein & Co. Ltd.  
Rapid Magnetic Machines Ltd.
- MAGNETS-ELECTRO LIFTING**  
Igranite Electric Co. Ltd.  
Rapid Magnetic Machines Ltd.
- MINE CARS**  
The Distington Eng'g Co. Ltd.
- MINE CAR — WHEELS & AXLES**  
Hadfields Ltd.
- MINERS' LAMPS**  
Premier Lamp & Eng'g Co. Ltd.
- PICKS — PNEUMATIC**  
Atlas Diesel Co. Ltd.  
Holman Bros. Ltd.  
Wood (Hugh) & Co. Ltd.
- PLANT — HIRE**  
Premier Plant & Hire Co. Ltd.  
Ward (Thos. W.) Ltd.
- POLYVINYL CHLORIDE RESIN**  
British Geon Ltd.
- PUMPING EQUIPMENT**  
Comet Pump & Eng'g Co. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Ward (Thos. W.) Ltd.
- PUMPS — CENTRIFUGAL**  
Comet Pump & Eng'g Co. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Ward (Thos. W.) Ltd.
- PUMPS — SAND**  
Denver Equipment Co. Ltd.  
Fraser & Chalmers Eng'g Wks.
- PUMPS — SINKING**  
Thom (John) Ltd.
- RAILWAY PLANT & EQUIPMENT**  
Jones (Wm.) Ltd.  
Ward (Thos. W.) Ltd.
- RESPIRATORS**  
Siebe Gorman & Co. Ltd.
- ROOF SUPPORTS**  
Dowty Mining Equipment Ltd.
- RUBBER PRODUCTS**  
British Tyre & Rubber Co. Ltd.  
Turner Bros. Asbestos Co. Ltd.  
U.S. Rubber International (G.B.) Ltd.
- SAFETY EQUIPMENT**  
Safety Products Ltd.  
Siebe Gorman & Co. Ltd.
- SCRAPER HAULAGE**  
Austin Hopkinson & Co. Ltd.  
Holman Bros. Ltd.  
Wood (Hugh) & Co. Ltd.
- SCRAPER LOADERS**  
Atlas Diesel Co. Ltd.  
Eimco (Great Britain) Ltd.  
Joy-Sullivan Ltd.
- SCREENING PLANT**  
Broadbent (Robt.) & Son Ltd.  
Davies Magnet Wks. Ltd.  
Fraser & Chalmers Eng'g Wks.  
Moxey Conveyor & Transporter Co. Ltd.  
Nordberg M.T.G. Co. Ltd.
- SHAFT SINKING**  
Cementation Co. Ltd.
- SHEVEL LOADERS**  
Atlas Diesel Co. Ltd.  
Eimco (Great Britain) Ltd.  
Joy-Sullivan Ltd.
- SURVEYING INSTRUMENTS**  
Hilger & Watts Ltd.
- TEST SIEVE VIBRATOR**  
The Pascall Eng'g Co. Ltd.
- THICKENERS**  
Denver Equipment Co. Ltd.
- TIMBER PRESERVATIVES**  
Hickson's Timber Impregnation Co. (G.B.) Ltd.
- TRANSFORMERS**  
British Thomson-Houston Co. Ltd.  
General Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.
- TUBE MILL LINERS**  
Hadfields Ltd.
- VEE-ROPE DRIVES**  
Wigglesworth (F.) & Co. Ltd.
- WATER SUPPLY EQUIPMENT**  
Thom (John) Ltd.
- WELDING**  
Cementation Co. Ltd.
- WELDING ELECTRODES**  
Metropolitan-Vickers Electrical Co. Ltd.
- WELDING EQUIPMENT**  
British Insulated Callender's Cables Ltd.  
Lincoln Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.
- WIRE ROPE & ACCESSORIES**  
British Ropes Ltd.
- WINDING EQUIPMENT — ELECTRIC**  
British Thomson-Houston Co. Ltd.  
General Electric Co. Ltd.  
Metropolitan-Vickers Electrical Co. Ltd.  
Robey & Co. Ltd.

**RIGHT TO THE CORE OF THE MATTER...**



Like giant webs beneath our towns and villages, lie thousands of miles of cable bringing power to the points where it is needed. In mine and mill, in castle and cottage, the best connections are those maintained by Ediswan Cables. By specifying Ediswan you are insisting on extra care in design and manufacture.

**Cables by EDISWAN**  
FOR HOME AND INDUSTRY

THE EDISON SWAN ELECTRIC CO. LTD., 155 CHARING CROSS ROAD, LONDON, W.C.2

Member of the A.E.I. Group of Companies

